Attorney General Thomas C. Horne
Firm Bar No: 14000
Laurie A. Hachtel (015949)
Joy L. Hernbrode (020494)
Paul A. Katz (004843)
Assistant Attorneys General
Natural Resources Section
1275 West Washington Street
Phoenix, Arizona 85007-2997
Phone No.: (602) 542-7793
Fax No.: (602) 542-4084
Email: NaturalResources@azag.gov
Attorneys for the Arizona State Land Department

BEFORE THE
ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN THE MATTER OF THE NAVIGABILITY OF THE VERDE RIVER FROM ITS HEADWATERS AT SULLIVAN LAKE TO THE CONFLUENCE WITH THE SALT RIVER, YAVAPAI, GILA AND MARICOPA COUNTIES, ARIZONA.	No. 04-009-NAV **ARIZONA STATE LAND DEPARTMENT'S NAVIGABILITY MEMORANDUM**

I. Introduction.

The Arizona State Land Department ("ASLD" or the "State") files this memorandum in response to the Arizona Navigable Stream Adjudication Commission's ("ANSAC" or "Commission") question whether any of the six pending rivers (the Lower Salt River, Upper Salt River, Gila River, Verde River, San Pedro River, and Santa Cruz River) were navigable in their natural and ordinary condition at statehood, as directed by the Court of Appeals in *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n,* 224 Ariz. 230, 229 P.3d 242 (App. 2010). This Commission must, as a matter of law, perform two separate and distinct tasks, it must: (1) analyze each river system on a segment-by-segment basis pursuant to the dictates of *PPL Montana, LLC v. Montana*, 565 U.S. ___, 132 S.Ct. 1216 (2012), something that was not originally required of the parties or the Commission in this matter; and (2) assess the navigability of each segment in the River's ordinary and natural condition prior to the massive diversion of waters for irrigation that began in the mid-to-late nineteenth century, prior to Arizona's statehood. The State previously submitted a Memorandum to ANSAC on January 27, 2012, that recommended how ANSAC should comply with the *Winkleman* decision. *See* Attachment A.

On June 8, 2012, the State submitted a Memorandum on the United States Supreme Court's decision in *PPL Montana,* 132 S.Ct. 1215 (2012). *See* Attachment B. Also, the State incorporates by reference its previously filed memoranda with ANSAC regarding the Verde River: State Land Department's Opening Post-Hearing Memorandum filed March 21, 2006, and State Land Department's Response to Opening Post-Hearing Memoranda filed April 11, 2006. In its *PPL Montana* Memorandum, the State recommended segments for the six pending rivers currently at issue before ANSAC. The Verde River was divided previously into three reaches: the upper, middle, and lower Verde. *Arizona State Land Department Rep., Arizona Stream Navigability Study for the Verde River: Salt River Confluence to Sullivan Lake,* Draft Final Report, 7-1 (rev. June 2003) ("ASLD Verde Report"), Evidence Item No. 31 ("E.I. 31"). This division is not consistent with the ordinary and natural physical characteristics of this river system, and accordingly the State has recommended five different segments based on the Verde River's physical characteristics. *See* Attachment C, comparison of reaches with recommended segmentation for the Verde River.

As the *Winkleman* Court instructed, ANSAC must 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." *State ex rel. Winkleman v. Ariz. Navigable Stream Adjudication Comm'n,* 224 Ariz. at 241, 229 P.3d at 253; *see PPL Montana, LLC v. Montana,* 132 S.Ct. at 1228 (title navigability determined at statehood based on the "natural and ordinary condition"). In applying the *Winkleman* Court's instruction to the Verde River, the River's natural condition was before man-made obstructions and diversions in the mid-1800's. E.I. 31, ASLD Verde Report , 3-9, 3-15 – 3-16.

The *Daniel Ball* test requires that ANSAC determine the ordinary and natural characteristics of the Verde River, and whether, at statehood, the River was used or was susceptible to being used as a highway for commerce. *Winkleman,* 224 Ariz. at 239, 229 P.3d at 251; *see Utah v. United States,* 403 U.S. 9, 12 (1971); *United States v. Utah,* 283 U.S. 64, 77-81 (1931); *United States v. Holt State Bank,* 270 U.S. 49, 52-53, 56-57 (1926); *The Daniel Ball,* 77 U.S. (10 Wall.) 557, 563 (1870). The Verde River was navigable within the meaning of the federal test because its ordinary and natural physical characteristics could have supported navigation, and because it was actually historically boated and continues to be boated today.

II. The Ordinary and Natural Physical Characteristics of the Verde River Were Sufficient to Support Navigation and Commerce.

The Verde River in its ordinary and natural condition was capable of being used for transportation or commerce. *See United States v. Utah*, 283 U.S. at 82 ("question of . . . susceptibility in the ordinary condition of the rivers, rather than of the mere manner or extent of actual use, is the crucial question. . . . The extent of existing commerce is not the test."); *PPL Montana,* 132 S.Ct. at 1233.

A. The Verde River's Ordinary and Natural Physical Characteristics – Its Hydrology, Hydraulics, and River Conditions – Demonstrate that the River Was Susceptible to Use as a Highway for Commerce.

1. Segmentation of the Verde River.

In its ordinary and natural condition, the Verde River from its headwaters above Perkinsville to the Salt River confluence, consists of five river segments defined by their navigability characteristics, hydrology, geology, and geography. Over its length, the Verde River flows through alternating reaches in narrow canyons and broad river valleys. E.I. 31, ASLD Verde Report, 7-1. On the basis of these navigability characteristics, the Verde River should have been segmented as indicated in Table 1.

Table 1. River Segments within the Verde River

	Segment Boundaries	Comments
Verde River	1 – Headwaters to Sycamore Creek	Seasonal modern recreational boating
	2 – Sycamore Creek to Beasley Flat	Popular year-round recreational boating
	3 – Beasley Flat to Verde Hot Springs	Whitewater boating , some commercial
	4 – Verde Hot Springs to Horseshoe Reservoir	Wilderness area, recreational boating
	5 – Horseshoe Reservoir to Salt River Confluence	Recreational and commercial boating

Attachment B, ASLD ANSAC Memorandum on *PPL Montana*, June 8, 2012.

a) Segment 1 - Headwaters to Sycamore Creek.

This segment extends from the Verde River headwaters near Paulden to the Sycamore Creek confluence upstream of Clarkdale. E.I. 31, ASLD Verde Report, 7-1. The River in Segment 1 flows within a deep, narrow, bedrock canyon with few access points. E.I. 31, ASLD Verde Report, 7-1. The River is located entirely within the Prescott National Forest. E.I. 31, ASLD Verde Report, 7-1. Segment 1 is perennial, with reliable flow throughout the year. E.I. 31, ASLD Verde Report, 3-22. The median annual flow rate ranges from about 25 cubic feet per second ("cfs") at the upstream end to 85 cfs at the downstream end. E.I. 38, J.E. Fuller PowerPoint. Segment 1 has a pool and riffle pattern (E.I. 31, ASLD Verde Report, 5-6; E.I. 38, J.E. Fuller PowerPoint), with Class II rapids. E.I. 34, Slingluff, Exhibits 32 and 33; *see* E.I. 31, ASLD Verde Report, 8-5 citing Arizona Rivers and Streams Guide, 158 – 159. Segment 1 is

distinguished from Segment 2 based on its slightly lower flow rate (E.I. 38, J.E. Fuller PowerPoint), more difficult river access (Tr., 39, 117 (Fuller)), lesser degree of historical disturbance (E.I. 38, J.E. Fuller PowerPoint), and sparser record of historical (E.I. 31, ASLD Verde Report, Appendix H) and modern boating. Tr., 117 (Fuller).

b) Segment 2 - Sycamore Creek to Beasley Flat.

Segment 2 extends from the Sycamore Creek confluence upstream of Clarkdale through the Verde Valley (E.I. 31, ASLD Verde Report, 7-1) to the Beasley Flat boating access ramp E.I. 18, U.S. Forest Service; Tr., 123 (Fuller). Segment 2 is more accessible for boating on the Verde. E.I. 9, Slingluff, Verde River Recreation Guide, 27, 35, 45, 57, 67, 75. A boating race that attracts hundreds of participants occurs annually. Tr., 36 (Fuller). Modern recreational boaters travel this reach throughout the year using canoes, kayaks, rafts and other low-draft boats. E.I. 31, ASLD Verde Report, 8-4 – 8-5; Tr., 37 (Fuller). The River is located in a broad valley (E.I. 31, ASLD Verde Report, 5-3), and consists of a gentle pool and riffle pattern. E.I. 31, ASLD Verde Report, 5-6. There are numerous official river access points with boat ramps and parking areas for boaters. E.I. 18, U.S. Forest Service. Significant tributaries in Segment 2 include Oak, Beaver and West Clear Creeks. E.I. 31, ASLD Verde Report, 7-2 – 7-3. Segment 2 is surrounded by National Forest lands, though most of the River itself lies on private property, except near Beasley Flats where the River lies on Coconino National Forest lands. E.I. 31, ASLD Verde Report, 6-3, 7-2. Segment 2 is distinguished from Segment 3 by its ease of access to the River, increasing the ability for more frequent boating (E.I. 18, Forest Service; E.I. 9, Slingluff, Verde River Recreation Guide, 27, 35, 45, 57, 67, 75; E.I. 31, ASLD Verde Report, 8-5, *citing* Arizona Rivers and Streams Guide, 158 – 163), smaller rapids (E.I. 9, Slingluff, Verde River Recreation Guide, 31, 76; E.I. 31, ASLD Verde Report, 8-5, *citing* Arizona Rivers and Streams Guide, 158 – 159), and greater degree of riverfront development. E.I. 31, ASLD Verde Report, 7-1; E.I. 9, Slingluff, Verde River Recreation Guide, 57, 67.

c) Segment 3 - Beasley Flat to Verde Hot Springs.

Segment 3 extends from the USFS Beasley Flat boat ramp to Verde Hot Springs near the historic community of Childs. E.I. 18, U.S. Forest Service. Segment 3 is known as the "whitewater reach" of the Verde River (E.I. 9, Slingluff, Verde River Recreation Guide, 85), due to the presence of concentrated rapids, along with the largest-classed rapid on the entire River. E.I. 34, Slingluff, Exhibits 3-4; E.I. 9, Slingluff, Verde River Recreation Guide, 87, 90, 91, 92; E.I. 31, ASLD Verde Report, 8-5, *citing* Arizona Rivers and Streams Guide, 164 – 165. This segment also includes the "Prefalls" with a three-foot drop and the Verde "Falls" (E.I. 34,

Slingluff, Exhibits 6-8; Tr., 106 (Slingluff); E.I. 9, Slingluff, Verde River Recreation Guide, 88), where there is a four-foot drop in the River that is often portaged by boaters. E.I. 34, Slingluff, Exhibit 5; Tr., 106 (Slingluff); E.I. 9, Slingluff, Verde River Recreation Guide, 88. Segment 3 is located within a bedrock canyon (E.I. 31, ASLD Verde Report, 5-1, 5-3; Tr., 21 (Pearthree)), and has a pool and riffle channel pattern. E.I. 31, ASLD Verde Report, 5-6. The U.S. Forest Service monitors, but does not operate a permitting system for the boating in Segment 3. E.I. 18, U.S. Forest Service. Segment 3 is distinguished from Segment 4 primarily by its larger, more difficult rapids. E.I. 34, Slingluff, Exhibit 3-8; E.I. 31, ASLD Verde Report, 8-5, *citing* Arizona Rivers and Streams Guide, 164 – 165.

d) Segment 4 - Verde Hot Springs to Horseshoe Reservoir.

Segment 4 extends from the Verde Hot Springs near Childs to the upstream end of the Horseshoe Reservoir impoundment. Despite its remote location (Tr., 62 (Pearthree)) and somewhat difficult access (Tr., 62 (Pearthree)), it is boated throughout the year by low-draft kayaks and canoes, (Tr., 55, 56 (Colby)); Tr., 110 (Slingluff)), and seasonally by recreational rafts and kayaks. Tr., 55, 56 (Colby); E.I. 34, Slingluff, Exhibits 20-22. The River consists of a pool and riffle pattern (E.I. 31, ASLD Verde Report, 5-6) inset within a deep valley. E.I. 31, ASLD Verde Report, 5-3. Riffles consist of Class I and II rapids (E.I. 31, ASLD Verde Report, 8-5, *citing* Arizona Rivers and Streams Guide, 164 – 167), with medium length pools and runs. E.I. 9, Slingluff, Verde River Recreation Guide, 102, 104. Significant tributaries to Segment 3 include Fossil Creek and the East Verde River. E.I. 31, ASLD Verde Report, 7-3. Segment 4 is distinguished from Segment 5 by the ability to observe the River in its natural condition. E.I. 9, Slingluff, Verde River Recreation Guide, 101. Segment 5 is influenced by reservoir impoundments (E.I. 31, ASLD Verde Report, 7-8), with broader river valleys of the Verde River in Reach 5. E.I. 31, ASLD Verde Report, 5-26.

e) Segment 5 - Horseshoe Reservoir to Salt River Confluence.

Segment 5 extends from Horseshoe Reservoir to the Salt River confluence. Segment 5 consists of the reaches of the Verde River that are now inundated or impacted by Horseshoe and Bartlett Reservoirs, two major water supply dams. E.I. 31, ASLD Verde Report, 5-3, 7-8. In its ordinary and natural condition, Segment 5 consisted of deep valleys (E.I. 31, ASLD Verde Report, 5-26) and similar pool and riffle channel conditions (E.I. 31, ASLD Verde Report, 5-26) to those in Segment 4. The segments downstream of Bartlett Dam are popular modern recreational boating segments, as well some seasonal commercial boating enterprises. Tr., 55, 56

(Colby). Significant tributaries in Segment 4 include Tangle and Sycamore Creeks. E.I. 31, ASLD Verde Report, 7-2, 7-3.

Natural barriers, such as some rapids found in the Verde River, may make navigation more difficult, but do not preclude a finding of navigability. *United States v. Utah,* 283 U.S. at 86-87; *Econ. Light & Power Co.*, 256 U.S. 113, 122 (1921) (stating that navigability is not destroyed because a watercourse is interrupted by occasional natural obstructions or portages); Tr., 125-126 (Slingluff) (the majority of the Verde's rapids are mild). Further, the presence of natural obstructions does not necessarily require portaging. Each type of obstruction (e.g., sandbar, waterfall, or rapid) as well as each type of boat and the purpose of its use, and the skill of the boater must be examined to determine if portaging is in fact required. *See United States v. Appalachian Elec. Power Co.*, 311 U.S. 377, 404 (1940) (stating that there is no "formula which fits every type of stream under all circumstances and at all times" and "[o]ur past decisions have taken due account of the changes and complexities in the circumstances of a river"); E.I. 31, ASLD Verde Report, 8-5 (difficulties boating the River may be related to the experience and skill of the boater); Tr., 125-126 (Slingluff). The Verde River's physical characteristics differ markedly from those found on the Missouri River; the Verde River has no seventeen-miles-long "Great Falls" with five waterfalls and continuous rapids in between. *See PPL Montana*, 132 S.Ct. at 1231. Therefore, the River has no segment that ANSAC could find non-navigable merely due to its physical characteristics.

2. Hydrology.

Flow data for the Verde River were derived primarily from the records and publications of the United States Geological Survey (USGS). E.I. 31, ASLD Verde Report, 7-1, B14 – B-16. The ASLD was the only party to compile and submit flow data, which included USGS records. USGS stream flow records are routinely relied on for stream flow and water adjudication studies throughout the United States, and are universally recognized as reliable and objective. E.I. 31, ASLD Verde Report, 7-1; Tr., 51 (Fuller). ASLD also submitted flow data based on: (1) direct measurement (E.I. 31, ASLD Verde Report, 7-5 – 7-8); (2) direct observations by explorers and early residents (E.I. 31, ASLD Verde Report, 7-7); and (3) stream flow reconstructions based on tree-ring data. E.I. 31, ASLD Verde Report, 7-24 – 7-25. All flow data indicate a consistent picture of perennial and reliable stream runoff in the Verde River.

USGS scientists and hydrologists reconstructed average flow conditions in the Verde River using stream gauge records from stations located upstream of the Salt-Verde confluence,

reproduced in Table 2 below. Graybill (1989) determined a long-term average annual flow rate of 400 cfs for the Verde River based on tree-ring records. E.I. 31, ASLD Verde Report, 7-6, 7-24. In no case was the natural minimum monthly or annual flow rate zero regardless of the severity of any drought condition. E.I. 31, ASLD Verde Report, 7-7, 7-8. All of the historical floods were rare occurrences with short durations. Tr., 31 (Fuller). Regardless, floods and droughts do not represent the ordinary and natural conditions of the River. E.I. 31, ASLD Verde Report, 7-20 – 7-21; Tr., 31 (Fuller).

Table 2
Verde River Streamflow Statistics (cfs)[1]

Gage	Average Annual[a]	90% Flow Rate	50% Flow Rate	10% Flow Rate
Paulden	42	31	25	22
Clarkdale	192	236	85	70
Camp Verde	439	837	189	84
Tangle Creek	559	917	238	120
McDowell	781	n.a.	968(?)[a]	n.a.
See Atshul, 1987				

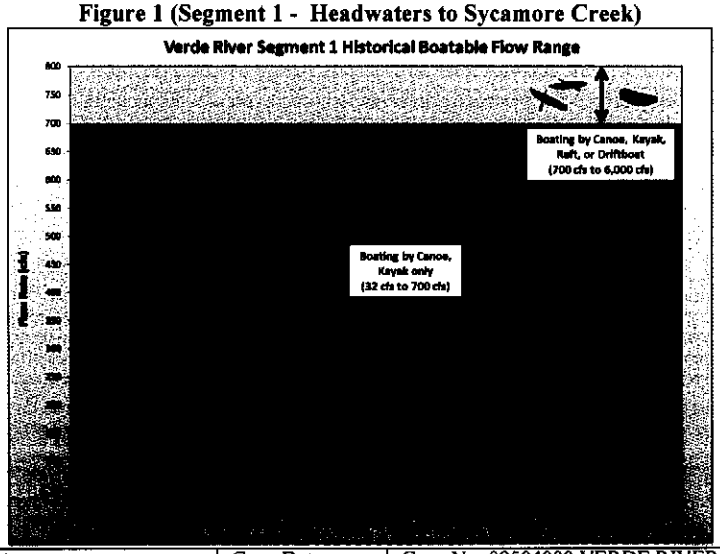
E.I. 31, ASLD Verde Report, 7-5.

The key aspects of the ordinary and natural flow data in the existing record for the Verde River include the following indisputable facts: (1) as with all natural rivers, there is seasonal fluctuation in the River's natural flow; (2) the ordinary and natural seasonal fluctuation occurs within an expected and predictable range; (3) the River experiences periodic floods and droughts: (a) floods on the River are rare and of short duration; flood conditions occur well less than 1% of the time, and do not constitute the ordinary and natural condition; and (b) the River never completely dried up, even in the most extreme drought; (4) boatable flow rates occurred more than 95% of the time; and (5) there was no predictable period when non-boatable flood conditions occurred. E.I. 31, ASLD Verde Report, 7-7 – 7-8, 7-9 –7-10, Table 7-5, Table 7-6, Table 7-7, 7-14 – 7-21, 8-1 – 8-2; Tr., 28 (Fuller).

Figures 1-4 below summarize the River's ordinary and natural condition flow data (non-drought, non-flood), and show the ordinary, seasonal fluctuation by month, as well as 10%, 50% (median), and 90% flow. These data indicate that the Verde River was ordinarily susceptible to boating throughout the year.

[1] In this table, the 90% flow rate indicates that 90% of the time the flow is less than the cfs number in the table, the 50% flow rate indicates that 50% of the time the flow is above the cfs number in the table, and the 10% flow rate indicates that 90 % of the time the flow is greater than the cfs number in the table.

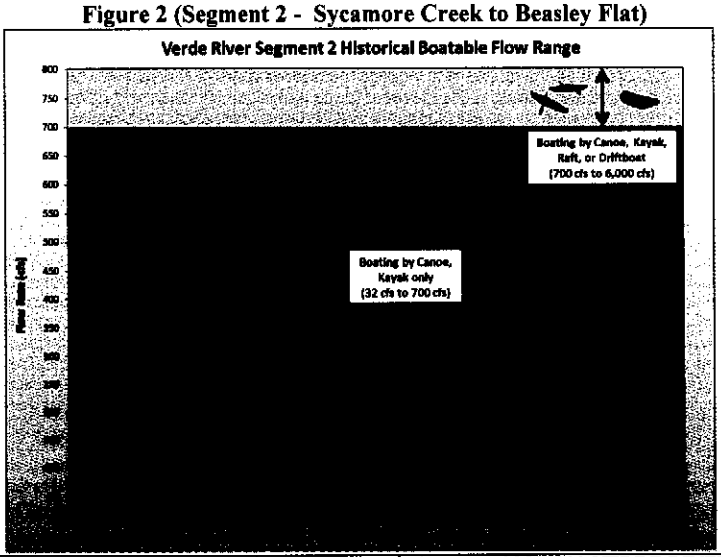
Figure 1 (Segment 1 - Headwaters to Sycamore Creek)



Key to Symbols & Data		Gage Data Source:	Gage No. 09504000 VERDE RIVER NEAR CLARKDALE, AZ
	No boating possible		
	Boating by canoes, kayaks	Source: Min. canoes (Tr., 56 (Colby)	
	Boating by all types	Source: Max canoes (Tr., 127 (Slingluff); Min Rafts (Tr., 32 (Fuller)	
	Boating only by rafts, drift boats	Source: Max rafts (Tr., 127 (Slingluff). Range exceeds values shown on chart.	
	90% Flow	Per stream gage records, 90% of time flow is less than this discharge (236 cfs).	
	50% Flow	Median flow rate per stream gage, 50% of time flow is above this discharge (85 cfs).	
	10% Flow	Per stream gage records, 90% of time flow is greater than this discharge (70 cfs).	
	Average monthly discharge as recorded at long-term USGS stream gaging stations.		
Notes:			

E.I. 31, ASLD Verde Report, 7-8 – 7-10, 7-16, Table 7-6; Tr., 56 (Colby); Tr.,127 (Slingluff); Tr., 32 (Fuller).

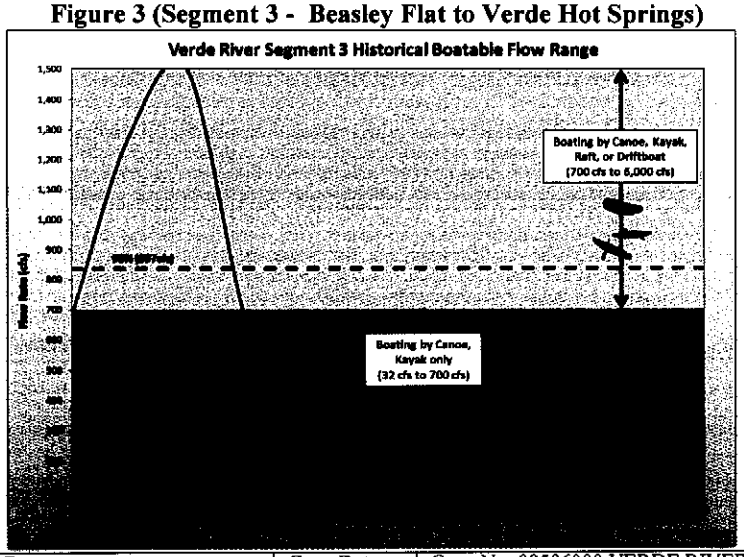
Figure 2 (Segment 2 - Sycamore Creek to Beasley Flat)



Key to Symbols & Data		Gage Data Source:	Gage No. 09504000 VERDE RIVER NEAR CLARKDALE, AZ
	No boating possible		
	Boating by canoes, kayaks	Source: Min. canoes (Tr., 56 (Colby)	
	Boating by all types	Source: Max canoes (Tr., 127 (Slingluff); Min Rafts (Tr., 32 (Fuller)	
	Boating only by rafts, drift boats	Source: Max rafts (Tr., 127 (Slingluff). Range exceeds values shown on chart.	
	90% Flow	Per stream gage records, 90% of time flow is less than this discharge (236 cfs).	
	50% Flow	Median flow rate per stream gage, 50% of time flow is above this discharge (85 cfs).	
	10% Flow	Per stream gage records, 90% of time flow is greater than this discharge (70 cfs).	
	Average monthly discharge as recorded at long-term USGS stream gaging stations.		
Notes:			

E.I. 31, ASLD Verde Report, 7-8 – 7-10, 7-16, Table 7-6; Tr., 56 (Colby); Tr.,127 (Slingluff); Tr., 32 (Fuller).

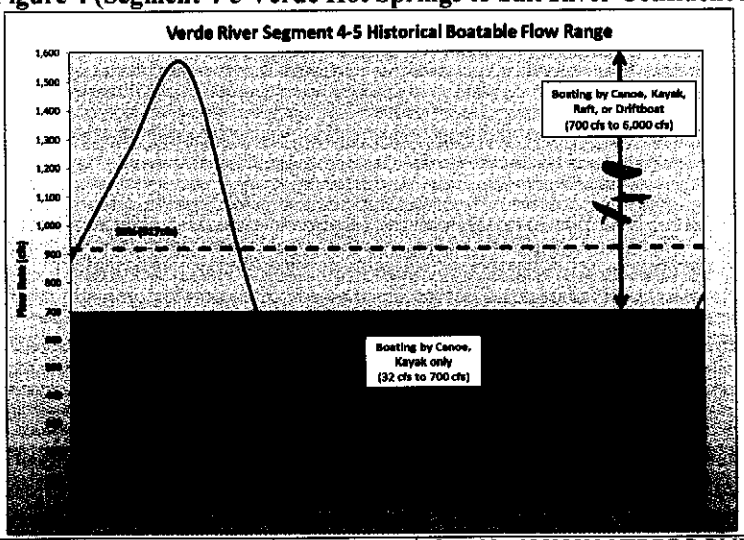
Figure 3 (Segment 3 - Beasley Flat to Verde Hot Springs)



Key to Symbols & Data			Gage Data Source:	Gage No. 09506000 VERDE RIVER NEAR CAMP VERDE, AZ
	No boating possible			
	Boating by canoes, kayaks		Source: Min. canoes (Tr., 56 (Colby)	
	Boating by all types		Source: Max canoes (Tr., 127 (Slingluff); Min Rafts (Tr., 32 (Fuller)	
	Boating only by rafts, drift boats		Source: Max rafts (Tr., 127 (Slingluff). Range exceeds values shown on chart.	
	90% Flow	Per stream gage records, 90% of time flow is less than this discharge (837 cfs).		
	50% Flow	Median flow rate per stream gage, 50% of time flow is above this discharge (189 cfs).		
	10% Flow	Per stream gage records, 90% of time flow is greater than this discharge (84 cfs).		
	Average monthly discharge as recorded at long-term USGS stream gaging stations.			
Notes:				

E.I. 31, ASLD Verde Report, 7-8 – 7-10, 7-16, Table 7-6; Tr., 56 (Colby); Tr.,127 (Slingluff); Tr., 32 (Fuller).

Figure 4 (Segment 4-5 Verde Hot Springs to Salt River Confluence)



Key to Symbols & Data			Gage Data Source:	Gage No. 09508500 VERDE R BLW TANGLE CREEK, ABV HORSESHOE DAM, AZ.
	No boating possible			
	Boating by canoes, kayaks		Source: Min. canoes (Tr., 56 (Colby)	
	Boating by all types		Source: Max canoes (Tr., 127 (Slingluff); Min Rafts (Tr., 32 (Fuller)	
	Boating only by rafts, drift boats		Source: Max rafts (Tr., 127 (Slingluff). Range exceeds values shown on chart.	
	90% Flow	Per stream gage records, 90% of time flow is less than this discharge (917 cfs).		
	50% Flow	Median flow rate per stream gage, 50% of time flow is above this discharge (238 cfs).		
	10% Flow	Per stream gage records, 90% of time flow is greater than this discharge (120 cfs).		
	Average monthly discharge as recorded at long-term USGS stream gaging stations.			
Notes:				

E.I. 31, ASLD Verde Report, 7-8 – 7-10, 7-16, Table 7-6; Tr., 56 (Colby); Tr.,127 (Slingluff); Tr., 32 (Fuller).

3. Hydraulics.

Hydraulic rating curves relate stream discharge to flow depth, width, and velocity. E.I. 31, ASLD Verde Report, 7-12. Rating curves data from USGS stream gauge stations are shown in Tables 3-5 below. E.I. 31, ASLD Verde Report, 7-16 – 7-17, 7-19. Maximum main channel depths generally range between one and three feet. E.I. 31, ASLD Verde Report, 7-16 – 7-17, 7-19. The average flow velocities are generally less than three feet per second. E.I. 31, ASLD Verde Report, 7-16 – 7-17, 7-19. Minimum channel top widths are between 20 and 170 feet. E.I. 31, ASLD Verde Report, 7-16 – 7-17, 7-19. These values are corroborated by depths and widths reported by early explorers and cited by contemporary investigators. E.I. 31, ASLD Verde Report, 3-11 – 3-15, 5-15 (a surveyor described the River in the 1870s as having an average width of 66 feet and an average depth of three feet), 5-23, 7-7, 7-24 – 7-26.

Comparing the hydraulic characteristics in Tables 3-5 with those for federal boating criteria (Table 6), and with the probable stream characteristics for canoes used at statehood (Table 7) leads to one conclusion: the Verde River in its ordinary and natural condition normally exceeded the minimum conditions for boating, and, therefore, was susceptible to navigation. *See* E.I. 31, ASLD Verde Report, 7-16, Table 7-9(b), 7-17, Table 7-10(b), 7-19, Table 7-12(b), 8-2, Table 8-2, 8-3, Table 8-3.

Table 3
Verde River near Clarkdale, 1915 to 1918
Flow Duration Hydraulic Characteristics

Flow Period	Flow Rate (cfs)	Average Depth (ft)	Velocity (ft/sec)	Topwidth (ft)
Average Annual Flow	192	2.2	4.0	21
90% Flow	236	2.5	4.3	22
50% Flow	85	1.5	3.1	19
10% Flow	70	1.4	2.8	19

NOTE: Flow duration statistics from entire period of record.

E.I. 31, ASLD Verde Report, 7-16, Table 7-9b.

Table 4
Verde River: Near Camp Verde, Gage 09506000
Flow Duration Hydraulic Characteristics

Flow Period	Flow Rate (cfs)	Average Depth (ft)	Velocity (ft/sec)	Topwidth (ft)
Average Annual Flow	439	2.0	1.3	165
90% Flow	84	1.2	0.4	120
50% Flow	189	1.5	0.7	145
10% Flow	837	2.6	1.9	170

E.I. 31, ASLD Verde Report, 7-17, Table 7-10b.

Table 5 Verde River: Below Tangle Creek, Gage 095085000 Flow Duration Hydraulic Characteristics				
Flow Period	**Flow Rate (cfs)**	**Average Depth (ft)**	**Velocity (ft/sec)**	**Topwidth (ft)**
Average Annual Flow	559	1.1	2.5	120
90% Flow	120	0.8	1.6	40
50% Flow	238	0.9	2.0	65
10% Flow	917	1.3	2.9	150

E.I. 31, ASLD Verde Report, 7-19, Table 7-12b.

Table 6 Minimum and Maximum Conditions for Recreational Water Boating						
Type of Boat	**Minimum Condition**			**Maximum Condition**		
	Width	**Depth**		**Width**	**Depth**	**Velocity**
Canoe, Kayak	25 ft.	3-6 in.		-	-	15 fps
Raft, Drift Boat	50 ft.	1 ft.		-	-	15 fps
Low Power Boating	25 ft.	1 ft.		-	-	10 fps
Source: Cortell and Associates, 1977						

E.I. 31, ASLD Verde Report, 8-2, Table 8-2.

Table 7 Flow Requirements for Pre-1940 Canoeing	
Boat Type	**Depth**
Flat Bottomed (Wood or Canvas)	4 in.
Round Bottomed (Wood or Canvas)	6 in.
Source: Slingluff, J., 1987	

E.I. 31, ASLD Verde Report, 8-3, Table 8-3.

4. River Conditions.

In its ordinary and natural condition, the River had a consistent geometry that is characterized as a pool and riffle stream pattern. E.I. 31, ASLD Verde Report, 5-6; Tr., 21 (Pearthree), Tr., 35 (Fuller). A pool and riffle stream consists of a single main channel with long, flat slow moving pools interspaced between short, steeper riffles (or rapids). E.I. 31, ASLD Verde Report, 5-6. This channel pattern applies to the entire length of the Verde River, but the spacing and size of the riffles varies somewhat between the various river segments. *See* E.I. 31, ASLD Verde Report, 5-6. The slope of the Verde River ranged from 12 to 25 ft/mile. E.I. 30, *Geomorphic Character of the Verde River*, Schumm, Dec. 2004, 14. The bed of the main channel was composed of sand, gravel and cobbles. E.I. 31, ASLD Verde Report, 5-6.

Where the River is located in bedrock canyons, it is not subject to significant lateral erosion during floods. E.I. 31, ASLD Verde Report, 5-3 – 5-5. The character of some rapids may change slightly over time, but overall there has been little change in river conditions during

the historical and modern periods, except in Segment 4 where reservoirs have inundated the canyons. E.I. 31, ASLD Verde Report, 5-26, 7-8. In the valley reaches, like Segment 3 in the Verde Valley, the River is subject to some level of channel movement, particularly during the largest floods. E.I. 31, ASLD Verde Report, 5-8 – 5-12. However, even if such movement occurs, the basic cross section of the boatable channel is unlikely to change in a manner that impacts navigability. *See* E.I. 31, Verde River Report, 5-12, 5-15, 5-26, 9-3 (size and general form of low-flow channels in Verde Valley are about the same today as they were in the 1870s); Tr., 24, 27 (Pearthree), 28 (Fuller).

B. The Verde River's Ordinary and Natural Physical Characteristics Met Historical Boating Requirements.

The type of boats typically used at statehood were flat-bottomed boats, skiffs, or canvas canoes, and a steel boat. E.I. 31, ASLD Verde Report, 8-3. The boats at statehood required a depth of four inches for a flat bottomed (wood or canvas) boat, and a depth of six inches for a round bottomed (wood or canvas) boat. E.I. 31, ASLD Verde Report, 8-3, Table 8-3; Table 7. The Verde River's ordinary and natural condition easily met these boating requirements. *See PPL Montana*, 132 S.Ct. at 1233 ("[e]vidence of recreational use, depending on its nature, may bear upon susceptibility of commercial use at the time of statehood."); *Holt State Bank,* 270 U.S. at 57 ("[e]arly visitors and settlers in that vicinity used the river and lake as a route of travel, employing the small boats of the period for the purpose.").

Navigability does not depend on a particular mode of commerce, the type of boat that is used or that could be used, or on actual use. *United States v. Utah,* 283 U.S. at 76; *see Appalachian,* 311 U.S. at 416 ("personal or private use by boats demonstrates the availability of the stream for the simpler types of commercial navigation."); *Holt State Bank,* 270 U.S. at 56 ("navigability does not depend on the particular mode in which such use is or may be had – whether by steamboats, sailing vessels or flatboats."); *The Montello*, 87 U.S. (20 Wall.) 430, 441-442 (1874) ("[T]he true test of the navigability of a stream does not depend on the mode by which commerce is, or may be conducted . . . . [i]t would be a narrow rule to hold that in this country, unless a river was capable of being navigated by steam or sail vessels, it could not be treated as a public highway."). The Verde River in its ordinary and natural condition exceeded the required stream characteristics for historical, low-draft boating, thus clearly demonstrating that the River was susceptible to navigation at statehood.

III. The Verde River's Ordinary and Natural Physical Characteristics Were Not Only Sufficient to Support Historic Navigation, The River Was Actually Navigated.

A. Historic Boating Evidence.

Historic use of the Verde River proves that the River was used for trade and travel. E.I. 31, ASLD Verde Report, 3-20 – 3-21, 8-2 – 8-4. Although some of the accounts did not occur when the River was in its ordinary and natural condition, these accounts are even more probative of navigability because they occurred in increasingly depleted flows. *See Winkleman,* 224 Ariz. at 255, 229 P.3d at 243 ("[e]ven if evidence of the River's condition after man-made diversions is not dispositive, it may nonetheless be informative and relevant"). Boats were used on the River near the establishment of Fort Verde in the 1860s. E.I. 31, Verde River Report, 8-3. Fort Verde kept a boat to facilitate communication during seasonal, high flow. E.I. 31, Verde River Report, 3-20, 8-3; Tr., 13 (Fuller). In 1903, two men went duck hunting downstream. E.I. 31, Verde River Report, 3-21; Tr., 14 (Fuller). In 1931, two men went on a trapping expedition on a flat-bottomed boat. E.I. 31, Verde River Report, 3-21; Tr., 14 (Fuller). Historically boated segments boated extend from Perkinsville to the Salt River confluence. E.I. 31, Verde River Report, 8-3. Historical boating accounts are somewhat limited because the area surrounding the Verde River was sparsely populated and consequently little commerce had been conducted on it. *See* Tr., 122-123 (Slingluff); *United States v. Utah,* 283 U.S. at 81-82 (nonuse not indicative of non-navigability based on many factors including non-settlement of the region). Historical boating accounts that occurred in depleted flows demonstrate not only that the Verde River is susceptible to navigability, but also that the River was actually navigated.

B. Modern Boating Evidence and Requirements.

Modern boating occurs over the entire River, although some segments are more popular boating areas than others. Tr., 34, 35 (Fuller) (pretty extensive modern recreational boating record), 37. It includes the use of canoes, ikayaks, kayaks, rafts, and catarafts. Tr., 37 (Fuller). According to *PPL Montana,* in order for present-day use to have a bearing on navigability at statehood, (1) the watercraft must be meaningfully similar to those in customary use for trade and travel at statehood; and (2) the River's post-statehood condition may not be materially different from its physical condition at statehood. 132 S.Ct. at 1233; *see also 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 statehood). The criteria for canoes in use at statehood are not substantially different from criteria for canoes available today. E.I. 31, ASLD Verde Report,

8-3; *compare* 8-3, Table 8-3 (Flow Requirements for Pre-1940 Canoeing), *with* 8-2, Table 8-2 (Minimum and Maximum Conditions for Recreational Water Boating), and 8-1, Table 8-1 (Minimum Required Stream Width and Depth for Recreation Craft). Although boat-making technology has improved since statehood making boats more durable, the depth of water required (draft) for canoeing has not substantially changed. E.I. 31, ASLD Verde Report, 8-4. Moreover, since flow rates on Arizona's rivers have generally declined since 1912, modern canoes could have probably been used at statehood. E.I. 31, ASLD Verde Report, 8-4. With respect to a watercourse's post-statehood condition, the *PPL Montana* Court was concerned that post-statehood improvements in navigability not be used to prove navigability for title purposes. *See PPL Montana,* 132 S.Ct. at 1233-1234. No such concern is necessary here where the River's flows are depleted, and thus there is no substantial improvement in the River's navigability.

The Verde River is one of the most, if not the most, frequently canoed, rafted, and kayaked Arizona river. E.I. 31, ASLD Verde Report, 8-4. Most boating occurs during the winter months and during spring runoff. E.I. 31, ASLD Verde River, 8-4. Periodic navigability is enough to establish navigability for title purposes even if a river is not susceptible to navigation at all seasons of the year or at all stages of the water. *United States v. Utah,* 283 U.S. at 87 (finding that portions of the Green, Colorado, and San Juan Rivers were navigable because they were useable as highways for commerce during at least nine months of the year); *Alaska v. Ahtna, Inc.* 891 F.2d at 1402 (Gulkana River navigable even though frozen six months of the year); *Oregon v. Riverfront Prot. Ass'n,* 672 F.2d 792, 795 (9th Cir. 1982) (McKenzie River found navigable based on seasonal log drives for seventeen years that occurred primarily during three months of each year); *cf PPL Montana,* 132 S.Ct. at 1234 (susceptibility cannot be so brief that it is not a commercial reality). The U.S. Forest Service recorded 728 boating trips by 863 individuals. Tr., 37 (Fuller). The U.S. Forest Service boating trips data, that is voluntarily provided by boaters, also shows that the River was used every month of the year. Tr., 37 (Fuller). In addition, the Town of Camp Verde sponsors an annual boat race on the River. Tr., 28, 36 (Fuller). The Game and Fish Department conducts fishery surveys using canoes on the River. Transcript of ANSAC Hearing on Nov. 16, 2005 attached as Exhibit A to Verde River Transcript, 212, 219 (Weedman).

Commercial river trips occur regularly on several segments of the River. Tr., 55-56 (Colby), Tr., 40 (Fuller). Commercial trips include single-day trips with as many as 150 people on the lower segments of the River to multi-day (7 day) trips with more than a dozen people and equipment on the upper part of the River. Tr., 56 -57 (Colby). The commercial trips generally

take place in the spring through the middle of May, and then resume in the fall, October and November using canoes, inflatable kayaks, inflatable rafts, and catarafts. Tr., 57 (Colby); *see Alaska v. Ahtna,* 891 F.2d at 1403 (guided trips on inflatable rafts carrying five passengers and guide held to support determination of navigability); *see also Utah v. United States,* 403 U.S. at 11 (nine boats sporadically used by ranchers to haul their livestock across the Great Salt Lake demonstrated that the Lake was used as a highway for commerce); A.R.S. § 37-1101(3) ("highway for commerce" is a corridor within which goods, commodities, or property or transportation of persons occur). The U.S. Forest Service permits several commercial rafting operations on the River. E.I. 31, ASLD Verde River, 8-4. Modern boating on the River confirms that in its ordinary and natural condition, the River was susceptible to navigation.

IV. Conclusion.

The Verde River evidence demonstrates that the River's ordinary and natural physical characteristics clearly supported navigation and commerce: there was reliable, permanent stream flow at all times resulting in the River being susceptible to navigation more than 95% of the time. Moreover, actual, historical boating occurred despite increasingly diminished flows thus proving that the River afforded a useful highway for commerce. The State urges ANSAC to find the Verde River navigable.

DATED: September 7, 2012.

THOMAS C. HORNE
Attorney General

Laurie Hachtel

Laurie A. Hachtel
Joy L. Hernbrode
Paul A. Katz
Assistant Attorneys General
Attorneys for the Arizona State Land Department

ORIGINAL AND SIX COPIES of the foregoing
hand-delivered for filing this 7th day of
September, 2012, to:

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

COPY of the foregoing mailed this 7th day of
September, 2012, to:

Fred E. Breedlove III
Squire Sanders
1 E. Washington St., Suite 2700
Phoenix, Arizona 85004
Attorney for Arizona Navigable Stream Adjudication Commission

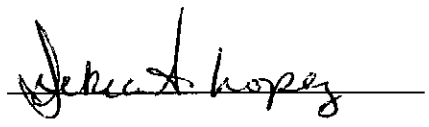
Joy Herr-Cardillo
AZ Center for Law in the Public Interest
2205 E. Speedway Blvd.
Tucson, AZ 85719-0001
Attorneys for Defenders of Wildlife, Donald Steuter, Jerry Van Gasse
and Vaaler

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

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

Joe Sparks
The Sparks Law Firm, P.C.
7503 First Street
Scottsdale, AZ 85251-0001
Attorneys for the Tonto Apache Tribe

Susan B. Montgomery
Robyn Interpreter
Montgomery & Interpreter P.L.C.
4835 East Cactus Road, Suite 210
Scottsdale, AZ 85254
Attorneys for Yavapai-Apache Nation



ATTACHMENT "A"

Attorney General Thomas C. Horne
Firm Bar No: 14000
Laurie A. Hachtel (015949)
Joy Hernbrode (020494)
Assistant Attorneys General
Natural Resources Section
1275 West Washington Street
Phoenix, Arizona 85007-2997
Phone No.: (602) 542-7793
Fax No.: (602) 542-4084
Email: NaturalResources@azag.gov
Attorneys for the Arizona State Land Department

Conformed
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BEFORE THE
ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN THE MATTER OF THE NAVIGABILITY OF THE VERDE RIVER FROM ITS HEADWATERS AT SULLIVAN LAKE TO THE CONFLUENCE WITH THE SALT RIVER, YAVAPAI, GILA AND MARICOPA COUNTIES, ARIZONA.	No. 04-009-NAV **ARIZONA STATE LAND DEPARTMENT'S MEMORANDUM**

On April 27, 2010, the Court of Appeals found that the Arizona Navigable Stream Adjudication Commission ("ANSAC" or the "Commission") misapplied the pertinent test for determining navigability of the Lower Salt River. The Court vacated the superior court's decision and remanded the matter back to ANSAC for further proceedings. *State ex rel. Winkleman v. Arizona Navigable Stream Adjudication Comm'n*, 224 Ariz. 230, 229 P.3d 242 (App. 2010) ("*Winkleman*"). On October 24, 2011, the superior court remanded the Verde River ("River" or "Verde") matter to ANSAC for all further proceedings consistent with the *Winkleman* decision. At ANSAC's December 14, 2011, meeting, the Commission requested that interested parties submit memoranda with their recommendations on how ANSAC should

comply with the *Winkleman* decision. The Arizona State Land Department (the "ASLD" or the "State") submits the following Memorandum in response to ANSAC's request.[1]

The Commission's navigability determination is governed by the federal test of navigability, known as the "*Daniel Ball*" test that provides as follows:

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

The Daniel Ball, 77 U.S. (10 Wall.) 557, 563 (1870); *see Defenders of Wildlife v. Hull*, 199 Ariz. 411, 420, 18 P.3d 722, 731 (App. 2001) (*Daniel Ball* test correctly paraphrased in A.R.S. § 37-1101(5)). The *Daniel Ball* test requires ANSAC to determine the characteristics of the Verde River in its ordinary and natural condition and whether, at statehood, the River was used or would have been susceptible to use as a highway-for-commerce in that condition. *Winkleman*, 224 Ariz. at 239, 229 P.3d at 251.

In the *Winkleman* decision, the Court of Appeals found that ANSAC failed to evaluate the Lower Salt River's ordinary and natural condition in light of the numerous dams, canals, and other diversions aside from Roosevelt Dam. *Winkleman*, 224 Ariz. at 240, 229 P.3d at 252. The Court of Appeals directed ANSAC to determine "what the River would have looked like on February 14, 1912, in its ordinary (i.e., usual, absent major flooding or drought) and natural (i.e., without man-made dams, canals, or other diversions) condition." *Winkleman*, 224 Ariz. at 241, 229 P.3d at 253. The Court found that the Lower Salt River was "in its natural condition after many of the Hohokam's diversions had ceased to affect the River, but before the commencement

[1] The State requests that the Commission delay any action on contested rivers until the U.S. Supreme Court issues its decision in *PPL Montana, LLC v. Montana*, 355 Mont. 402, 229 P.3d 421 (2010), *cert. granted in part & denied in part*, 79 U.S.L.W. 3102* (U.S. June 20, 2011) (No. 10-218). The *PPL* decision could potentially affect application of the federal test in the contested rivers before ANSAC.

of modern-era settlement and farming in the Salt River Valley, when some of the Hohokam's diversions were returned to use and other man-made diversions and obstructions began to affect the River." *Winkleman*, 224 Ariz. at 242, 229 P.3d at 254. In applying the *Winkleman* Court's instruction to the Verde River, the Verde River should be assessed in its pre-statehood ordinary and natural condition, disregarding all man-made obstructions and diversions.[2]

Farming on the middle Verde River, near Camp Verde, began in 1865 just after the establishment of the garrison. *See* ASLD Verde Report, 3-9. By 1880, most of the farmable land in the Verde Valley was under cultivation. ASLD Verde Report, 3-16. In 1884, 3,000 acres along the Verde River were being farmed and that a canal under construction would bring another 1,000 acres under production. ASLD Verde Report, 3-15. Although ANSAC is not limited to considering evidence of the Verde River's natural condition solely from the time before significant diversions began, "that early period should be considered by ANSAC as the best evidence of the River's natural condition." *See Winkleman*, 224 Ariz. at 242, 229 P.3d at 254.

Ample historical evidence exists in the well-developed record describing the River's ordinary and natural condition in this time frame. For example, Anglo fur trappers came to the Verde River in the early 1820s and through the 1840s. Jonathan E. Fuller, P.E., R.G., P.H., CFM, ("Fuller") Transcript of the ANSAC hearing Jan. 18, 2006, (hereinafter "Tr. 1/18/06 at ___") at 11. In 1826, trappers James Ohio Pattie, Ewing Young, and others traveled up the Salt

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[2] Indian peoples had been irrigating with river water, but Euro-American diversions began around 1865 with the construction of Camp Lincoln on the middle Verde River. *Arizona State Land Department Rep., Arizona Stream Navigability Study for the Verde River: Salt River Confluence to Sullivan Lake* (rev. June 2003 by JE Fuller/Hydrology & Geomorphology, Inc.), Evidence Item ("E.I.") 31 ("ASLD Verde Report"), 3-9. According to Margaret Goddard, the principal irrigation ditches in the middle Verde River and their dates of establishment were the Eamon or Diamond Ditch (1865), the Wood Ditch (1868), the Cottonwood Ditch (1869), the O.K. or Middle Verde Ditch (1873), and the Hickey Ditch (1874). ASLD Verde Report, 3-15.

River, trapping beaver along the way. ASLD Verde Report, 3- 8. As part of this expedition, Young went up the Verde River and followed it up to its headwaters, then returned to the Salt River. *Id.* In 1829, Young returned with 40 other trappers (including Kit Carson), traveling up the Verde River to the Chino Valley. *Id.* John Wolfskil, George Yount, and Pauline Weaver trapped the Verde River in 1829 and 1830. ASLD Verde Report, 3-9.

White settlement in the Verde Valley began in 1863. ASLD Verde Report, 3-2, Table 3-1. A surveyor, Mr. Foster, described the River of the 1870s as "a beautiful stream of clear, pure water with an average width of 100 links (66 feet) and an average depth of three feet" He estimated the banks of the low-flow channel at three feet, and he described cottonwoods, willows, and mesquite lining much of the river bank. ASLD Verde Report, 5-15. An 1884 account of the Verde River describes it as "clear and limpid," "as large as the Gila," "well stocked with fish," and "capable of irrigating vast stretches of land." ASLD Verde Report, 3-4, Table 3-1. Dr. Ralph F. Palmer arrived in Camp Verde in 1902 and described the River as 50 feet wide, no more than waist deep with banks two to three feet high. ASLD Verde Report, 3-15. At statehood, the Verde's perennial flow was sufficient to supply irrigation for thousands of acres of farmland, to supply water and power for local residents, and to support native fish and aquatic mammal populations and lush riparian habitat.

Moreover, probative evidence exists of the River's ordinary and natural physical characteristics that could support navigation. The Verde is perennial, with reliable flows sufficient for shallow draft boating throughout the year. Fuller PowerPoint Slides, E.I. 38, 18 - 21. The Verde is supported by a steady discharge from springs and ground water. ASLD Verde Report, 7-3. However, the River's naturally perennial flow has been adversely impacted by irrigation diversions. ASLD Verde Report, 7-22 – 7-23. 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, predevelopment condition.

Systematic hydrologic measurements made by the United States Geological Survey ("USGS") and others that extend back well before statehood provide an undisputable record of reliable, perennial flow throughout the year. ASLD Verde Report, 7-4 – 7-10, Tables 7-1 – 7-7. The hydrologic data is reported as median (50%), monthly average minimum, monthly average maximum, and flow duration records. ASLD Verde Report, 7-9, Table 7-5; Fuller Tr. 1/18/06 at 31; Fuller PowerPoint Slides, 17-22. USGS gauge readings from 1889 through 1939, the average annual flow at McDowell was 781 cfs. ASLD Verde Report, 7-10, Table 7-6. In addition to this flow data, archaeological records of irrigation extending back more than 1,000 years (Fuller Tr. 1/18/06 at 10), tree-ring studies (Fuller Tr. 1/18/06 at 29) and historical descriptions of the River (Fuller Tr. 1/18/06 at 13) that include not just reliable flow, but also healthy fish, beaver, and otter populations (Fuller Tr. 1/18/06 at 11), paint a consistent picture that supports the long-term stream gauge information. Collectively, this hydrologic data shows 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.

Moreover, floods are not the ordinary condition of the River.[3] In fact, long-term flow records demonstrate that, while large flash floods can occur on the Verde River, flood conditions that might inhibit boating occur less than one percent of the time. Fuller, Tr. 1/18/06 at 31, Fuller PowerPoint Slides, 18-21. Therefore, descriptions of flood hazards and flood conditions are irrelevant for determining navigability in the "ordinary and natural" condition of the River.

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[3] While the River's ordinary and natural condition is in neither flood nor drought, flooding on the Verde has caused changes that should be considered by ANSAC. Namely, the 1891 flood may have changed the flood-channel position and morphology, and decreased the marsh surrounding the River. Fuller PowerPoint Slides, 9; ASLD Verde Report, 5-12.

The dominant low flow channel at ordinary flow rates is a single channel with a pool and riffle pattern. Philip Pearthree, Arizona Geological Survey ("Pearthree") Tr. 1/18/06 at 20-21. Thus, the River's ordinary and natural flow conditions and its natural geomorphology–that is before numerous irrigation diversions depleted the River's waters–establish that the River was susceptible for use as a highway-for-commerce.

The Court of Appeals declined to consider whether ANSAC misconstrued the "highway-for-commerce" component of the *Daniel Ball* test. *See Winkleman*, 224 Ariz. at 242 n.16, 229 P.3d at 254 n.16. There is substantial evidence that when the River was in its ordinary and natural condition, it was actually used as a highway-for-commerce, or was at least capable of use as a highway-for-commerce within the meaning of the *Daniel Ball* test.[4] Despite a very sparse population in the Verde Valley and no local news source around the time of statehood, there are seven recorded accounts of boating during this historical period. ASLD Verde Report, 3-20 – 3-21, 8-2 – 8-4. All of the accounts describe successful boating trips and none report problems with navigability. Fort Verde personnel and civilians kept boats to reach the other side of the River during periods of seasonal high flow. ASLD Verde Report, 8-3. A photograph shows two men on the Verde in a collapsible U.S. Army boat about 1887. ASLD Verde Report, 3-20. At least two newspaper accounts describe soldiers boating down the Verde River from Ft. McDowell to Phoenix. ASLD Verde Report, 3-20. In 1931, two men boated seventy miles down the Verde, trapping all of the way. ASLD Verde Report, 3-21.

[4] The Arizona State Legislature has broadly defined the highway-for-commerce requirement as "a corridor or conduit within which the exchange of goods, commodities or property or transportation of persons may be conducted." A.R.S. § 37-1101(3).

In addition, evidence of modern, recreational boating may demonstrate that a river was susceptible to use as a highway-for-commerce.[5] *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 recreational use is in line with the traditional test of navigability). Currently, the Verde River is used for significant amounts of modern boating. Modem boating occurs over the entire length of the Verde River (Fuller Tr. 1/18/06 at 34, 37), although some reaches are more popular boating areas than others. From January 2001 to March 2005, the United States Forest Service recorded 728 boating trips by 863 individuals. Fuller Tr. 1/18/06 at 37. Arizona State Parks lists the Verde River from Perkinsville to the Salt River as a boatable stream. ASLD Verde Report, 8-4 – 8-5. Commercial boating is common on the Verde River. *See generally,* Fuller Tr. 1/18/06 at 40; John Colby ("Colby") Tr. 1/18/06 at 55–63. Commercial rafting trips include single-day trips on the lower section of the River with as many as one hundred fifty commercial guests. Colby Tr. 1/18/06 at 55–56. The trips on the upper Verde are for up to seven days and with up to twelve commercial guests with water levels ranging from about 32 cfs to up to 3,500 cfs as measured at the Camp Verde gauge. Colby Tr. 1/18/06 at 56. Boats used on the Verde include inflatable rafts, "catarafts," canoes and inflatable kayaks. Colby Tr. 1/18/06 at 57. The boats carry not only the guests, but also the camping gear and food to be used by the group. *See Ahtna*, 891 F.2d at 1403

[5] *See Northwest Steelheaders Ass'n, Inc. v. Simantel*, 112 P.3d 383, 391-393 (Or. Ct. App. 2005) (post-statehood use, by comparable vessels, probative because post-statehood conditions were *less* favorable to navigation than conditions at statehood), *review denied*, 122 P.3d 65 (Or. 2005), *cert. denied*, 547 U.S. 1003 (2006); *Winkleman*, 224 Ariz. at 244, 229 P.3d at 243 ("Even if evidence of the River's condition after man-made diversions is not dispositive, it may nonetheless be informative and relevant.")

(guided trips on inflatable rafts carrying five passengers and guide held to support determination of navigability); *Defenders*, 199 Ariz. at 424, 18 P.3d at 735 (guided fishing and sightseeing trips, although merely recreational, are 'transportation for profit' and can be considered commercial activity under the *Daniel Ball* test). The Town of Camp Verde sponsors an annual boat race on the Verde River (Fuller Tr. 1/18/06 at 28, 36) and boating by environmental regulatory agencies (David Weedman, Tr. 1/18/06 Ex. A at 219) also occurs on the Verde River.

The Court directed ANSAC to properly apply the ordinary and natural component of the *Daniel Ball* test. Equally important is the Court's insistence that ANSAC "may not begin its determination with any presumption *against* navigability." *Winkleman,* 224 Ariz. at 239, 229 P.3d at 251 (emphasis in original). In reaching its determination, "ANSAC's approach and analysis must be wholly impartial and objective, while utilizing the proper legal test." *Winkleman,* 224 Ariz. at 239, 229 P.3d at 251. The Commission should reconsider its prior findings that the Verde River was neither actually navigable nor susceptible to navigation to ensure that its new findings comply with the applicable legal standard.

Substantial evidence exists clearly demonstrating that the Verde River in its ordinary and natural condition before 1912, was used or was capable of being used as a highway-for-commerce. The Commission should consider the significance of post-1865 use of the River–despite decreasing flows due to numerous diversions–in reaching its determination. The Commission also should consider diversions as merely one special factor in the Verde River Valley's development rather than as a condition that precludes a navigability finding, and the River's subsequent limited use as merely a unique circumstance in its overall objective review of the evidence under the *Daniel Ball* test.

The ASLD informs the Commission that due to uncertain resources, the ASLD may be restricted in responding, participating or producing additional evidence in the adjudication proceedings.

DATED: January 27, 2012.

THOMAS C. HORNE
Attorney General

Laurie A. Hachtel
Joy L. Hernbrode
Assistant Attorneys General
Attorneys for the Arizona State Land Department

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Joy Herr-Cardillo
AZ Center for Law in the Public Interest
2205 E. Speedway Blvd.
Tucson, AZ 85719-0001
For Defenders of Wildlife, Donald Steuter, Jerry Van Gasse
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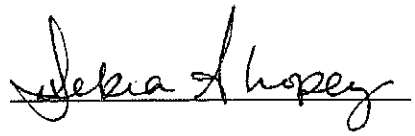
John B. Weldon, Jr.
Mark McGinnis
Rebecca Goldberg
Salmon, Lewis and Weldon, PLC
2850 E. Camelback Rd., Ste. 200
Phoenix, AZ 85016-4316
Attorneys for the Salt River Project Agricultural Improvement and Power District and the Salt River Valley Water Users' Association

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

Joe Sparks
The Sparks Law Firm, P.C.
7503 First Street
Scottsdale, AZ 85251-0001
Attorneys for the Tonto Apache Tribe

Susan B. Montgomery
Robyn Interpreter
Montgomery & Interpreter P.L.C.
4835 East Cactus Road, Suite 210
Scottsdale, AZ 85254
Attorneys for Yavapai-Apache Nation



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ATTACHMENT "B"

Thomas C. Horne
Attorney General
Firm Bar No: 14000
Laurie A. Hachtel (015949)
Joy Hernbrode (020494)
Assistant Attorneys General
Natural Resources Section
1275 West Washington Street
Phoenix, Arizona 85007-2997
Phone No.: (602) 542-7793
Fax No.: (602) 542-4084
Email: NaturalResources@azag.gov
Attorneys for the Arizona State Land Department

Conformed Copy. Received 6/8/12 1:30 P.M.

BEFORE THE
ARIZONA NAVIGABLE STREAM ADJUDICATION COMMISSION

IN RE DETERMINATION OF NAVIGABILITY OF THE LOWER SALT RIVER; UPPER SALT RIVER; GILA RIVER; VERDE RIVER; SAN PEDRO RIVER; AND SANTA CRUZ RIVER	No. 03-005-NAV (Lower Salt) No. 04-008-NAV (Upper Salt) No. 03-007-NAV (Gila) No. 04-009-NAV (Verde) No. 03-004-NAV (San Pedro) No. 03-002-NAV (Santa Cruz) **ARIZONA STATE LAND DEPARTMENT'S MEMORANDUM REGARDING EFFECT OF UNITED STATES SUPREME COURT'S PPL MONTANA DECISION AND SEGMENTATION OF REMANDED CASES**

The Arizona State Land Department ("ASLD" or the "Department") submits the following memorandum in response to the Arizona Navigable Stream Adjudication Commission's ("ANSAC" or "Commission") request for memoranda addressing how the United States Supreme Court's decision in *PPL Montana, LLC v. Montana*, 565 U.S. ___ , 132 S.Ct. 1215 (2012) ("*PPL Montana*") impacts ANSAC's proceedings and determinations. This Memorandum identifies the main issues addressed in *PPL Montana*, and the applicability of that

decision to the Commission's proceedings and determinations. Further, the ASLD addresses ANSAC's request for an analysis of the segmentation issue presented in *PPL Montana*.

On February 22, 2012, the U.S. Supreme Court issued a decision in *PPL Montana*, reversing the Montana Supreme Court's ruling that required PPL Montana to pay rent for the use of Montana's riverbeds covered by its hydroelectric dams. The Court's decision addressed discrete segments of otherwise navigable rivers in Montana. The Court ultimately found that the reach of the Missouri River on which the Great Falls and five privately owned hydroelectric dams are located was not navigable for title purposes at Montana's statehood. *PPL Montana*, 132 S.Ct. at 1232. However, the Court did not decide the navigability of the remainder of the Missouri River, or the Madison and Clark Fork Rivers, but left that determination to the Montana Supreme Court. 132 S.Ct. at 1233.

I. NAVIGABILITY MUST BE DETERMINED SEGMENT-BY-SEGMENT

The main holding of the U.S. Supreme Court's *PPL Montana* decision is that a river's navigability must be determined on a segment-by-segment basis.[1] *PPL Montana,* 132 S.Ct. at 1229. The *PPL Montana* Court noted that "practical considerations" supported segmentation of watercourses, and that "[p]hysical conditions that affect navigability often vary significantly over the length of a river." *PPL Montana,* 132 S.Ct. at 1230. The Court noted that "[t]his is particularly true with longer rivers" – like the ones found in Arizona – that traverse through different terrain and climates. *Id.* Changes in a river's physical conditions assist in determining start and end points for segmentation. *Id.* The Court also noted that topographical and geographical features also may assist in identifying appropriate start and end points for

[1] ANSAC's statutes allow ANSAC to examine watercourses in reaches or portions. A.R.S. § 37-1101(11) (definition of "watercourse" is the "main body or a portion or reach" of a river). However, ANSAC's determinations thus far have addressed the rivers as a whole with the exception of the Salt River that was divided into upper and lower reaches.

segmentation. *Id.* The segments at issue in *PPL Montana* were both discrete, as defined by physical features, and substantial. *Id.* at 1231. The Court focused on the Great Falls reach which is not only 17 miles long, but contains distinct drops that include five waterfalls and continuous rapids. *Id.*

The *PPL Montana* Court further acknowledged that there could be a "de minimis exception" to the segmentation approach. *Id.* at 1230. The Court stated that some nonnavigable segments may be "so minimal that they merit treatment as part of a longer, navigable reach for purposes of title under the equal footing doctrine . . . ." *Id.* at 1230. The Court identified considerations related to ownership and title of property "such as inadministrability of parcels of exceedingly small size, or worthlessness of the parcels due to overdivision" as de minimis exceptions. *Id.* at 1231.

There are a number of differences between the rivers in *PPL Montana* and the rivers currently under consideration by ANSAC. For example, the Montana and Arizona rivers have differences in seasonality, e.g., the Montana rivers may freeze in the winter while the Arizona rivers do not. More importantly, there are no waterfalls on any of the Arizona rivers that are of the size found along the Great Falls reach of the Missouri River. Finally, the Supreme Court noted that PPL Montana's expert claimed that man-made dams had made the Montana rivers more navigable compared to their ordinary and natural condition, because the dams tend to reduce flood peaks and moderate seasonal low flows. *PPL Montana*, 132 S.Ct. at 1234. In Arizona, the presence of dams has made the rivers less navigable because the dams tend to remove all or most of the natural river flow.

The Department's reports previously provided to ANSAC for each of these rivers included discussions that divided the rivers into separate reaches. These reach divisions were based on a variety of physiographic, hydrologic, geologic, and geographic factors. Each report

was divided into reaches with similar characteristics. The reach designations in the previous ALSD reports were defined based on criteria related to, but somewhat different from, the issues raised in the Montana case. The *PPL Montana* Court's decision outlined several specific navigability criteria that may not have been directly addressed in the previous ASLD reports.

Based on the *PPL Montana* Court's decision and the existing record, ANSAC should consider the following factors in determining segmentation: whether the river is located in a canyon or runs through flats or wide river valleys; the river's flow rate (including tributary inflow and watershed size); the classification of rapids by degree of difficulty; whether the river is a gaining or losing stream; and the river's slope or steepness. Based on those factors, ASLD recommends that ANSAC consider the following river segments.

Table 1. Recommended Stream Segmentation

River	Segment Boundaries (Approximate)	Segment Description
Gila	1 – New Mexico to Gila Box	Extends from New Mexico border through a broad alluvial valley with irrigated farm land. Includes the Town of Duncan and the communities of Sheldon, Apache Grove, York and Guthrie.
	2 – Gila Box	Deep canyon reach that includes the BLM National Conservation Area and is a popular recreational boating route. Significant tributaries (San Francisco, Eagle, Bonita) add flow.
	3 – Gila Box to San Carlos Reservoir	River flows through broad alluvial valley with irrigated farm land. Includes the Towns of Safford, Thatcher, Pima and Fort Thomas, and portions of the San Carlos Indian Reservation. Includes San Carlos Lake.
	4 – San Carlos Canyon	Narrow bedrock canyon located downstream of Coolidge Dam in the Needles Eye Wilderness on the San Carlos Indian Reservation. Extends downstream to near SR77.
	5 – San Carlos Canyon to Ashurst-Hayden Dam	River flows in shallow, moderately wide bedrock canyon past the communities of Winkelman, Hayden, Kearny, and Kelvin, and through the Tortilla Mountains. Significant tributary is the San Pedro River. Segment is used for seasonal recreational boating.

Table 1. Recommended Stream Segmentation		
River	**Segment Boundaries (Approximate)**	**Segment Description**
	6 – Ashurst-Hayden Dam to Salt River Confluence	Extends from the Ashurst-Hayden Dam through the extensively irrigated alluvial valley that includes the Cities of Florence and Coolidge, as well as the Gila River Indian Community. Significant tributary includes the Santa Cruz River (dry).
	7 – Salt River Confluence to Dome	River flows through the western portion of the Salt River Valley and the Phoenix metropolitan area, and is similar in character to the lower Salt River (Segment 5). Some modern recreational boating between Salt River confluence and Gillespie Dam. Significant tributary includes the Hassayampa River. Historical accounts of boating.
	8 – Dome to Colorado	River passes through broad gap in Gila Mountains into Colorado River Valley. Some early records of historical boating upstream to Dome from Colorado River.
Salt	1 – White/Black River Confluence to Apache Falls	Narrow, deep bedrock canyon with remote access, and located within the Fort Apache Indian Reservation. Modern boating is not permitted by the tribe upstream of Apache Falls, but would likely include numerous rapids. Significant tributaries include Carrizo Creek.
	2 – Apache Falls to Sleeper Rapid - Gleason Flat	Segment includes the one of the most frequently boated river segments in Arizona, and is home to several seasonal commercial boating operations. River is located in deep bedrock canyon and includes many named and unnamed rapids. Gleason is largest of "flats" reaches with wide canyon, few rapids and easier access. Significant tributaries include Cibeque and Canyon Creek. Located within the Tonto National Forest, Salt River Canyon Wilderness, and the Fort Apache and San Carlos Indian Communities.
	3 – Sleeper Rapid to Roosevelt Dam - Roosevelt Flat	River continues in deep bedrock canyon, but with fewer and smaller rapids. Located primarily within the Salt River Canyon Wilderness. Includes the large flats area now inundated by Roosevelt Lake. Significant tributaries include Pinal and Cherry Creeks.
	4 – Roosevelt Dam to Stewart Mountain Dam	River in deep bedrock canyon now inundated by backwater from SRP dams. Modern recreational boating on man-made lakes. Records of historical boating pre-date reservoirs.

Table 1. Recommended Stream Segmentation		
River	**Segment Boundaries (Approximate)**	**Segment Description**
	5 – Stewart Mountain Dam to Verde River Confluence	River in moderately deep and wide canyon with few small rapids. Includes the most well used recreational boating reach in Arizona. Located within the Tonto National Forest. Records of historical boating.
	6 – Verde River Confluence to Gila River Confluence	River flows through wide alluvial valley with no natural rapids or obstructions. Includes many of the communities in metropolitan Phoenix, as well as portions of the Salt River Pima Maricopa, Fort McDowell, and Gila River Indian Communities. Records of historical boating and modern boating upstream of Granite Reef Dam and on effluent dominated reaches west of downtown Phoenix.
Verde	1 – Headwaters to Sycamore Creek	Extends from Paulden Dam through steep, rugged canyons with limited but reliable flow. Few instances of modern boating.
	2 – Sycamore Creek to Beasley Flat	River flows through shallow canyons and wide alluvial valleys through Verde Valley including communities of Perkinsville, Clarkdale, Cottonwood and Camp Verde. Major tributaries include Oak, Beaver and West Clear Creeks. Records of historical boating. Extensive modern recreational boating, including annual canoe and kayak race. Some minor rapids.
	3 – Beasley Flat to Verde Hot Springs	River enters deep, narrow bedrock canyon with Wild and Scenic designation. Known as the whitewater reach of the Verde River and is popular modern recreational boating reach, with limited commercial boating. Records of historical boating.
	4 – Verde Hot Springs to Horseshoe Reservoir	River located within several US National Forests and two Wilderness areas. Major tributaries include Fossil Creek and East Verde River. River flows through shallow canyons and narrow alluvial valleys, with small rapids. Popular, but very remote, modern recreational boating reach. Records of historical boating.
	5 – Horseshoe Reservoir to Salt River Confluence	River flows through broader alluvial valleys with some short canyon reaches and few small rapids. Major tributary is Sycamore Creek. Modern recreational boating and historical boating records.

Table 1. Recommended Stream Segmentation		
River	**Segment Boundaries (Approximate)**	**Segment Description**
San Pedro	1 – Mexican Border to Gila River Confluence	River flows in alluvial valley. Flows intermittent or interrupted perennial with very low flow rates. No historical boating record. Modern recreational boating only during floods.
Santa Cruz	1 – Headwaters to Mexican Border	The river is a relatively small stream flowing in broad alluvial valleys, and flows into Mexico. Very low flow rates. No record of historical or modern boating.
	2 – Mexican Border to Marana	Normally dry river in broad alluvial river. Some possibility that some segments had very shallow perennial or intermittent flow. No record of historical or modern boating, except during floods or on effluent discharges from wastewater treatment plants.
	3 – Marana to Gila River Confluence	Historically dry river in broad alluvial valley with no historical or modern boating record.

ASLD recommends that ANSAC reopen the record to allow interested parties to submit evidence on the appropriate segmentation of the Salt, Verde, Gila, San Pedro and Santa Cruz Rivers.

A. Sufficiently Obstructed River Segments That Require Travelers To Portage May Be Nonnavigable

The need to portage may defeat navigability for purposes of establishing state title to a particular segment because it requires transportation over land, not water. *PPL Montana,* 132 S.Ct. at 1231. Portages generally demonstrate "the need to bypass the river segment." *Id.* The Great Falls reach in *PPL Montana* was an undisputed interruption to navigability in that it required overland portage, and the falls had never been navigated. *Id.* at 1232. In *PPL Montana,* Lewis and Clark transported supplies and small canoes approximately 18 miles over land for 11 days or more. *Id.* at 1231. Although there are no portages of similar scale recorded on Arizona rivers, ANSAC must evaluate whether there are stretches of the remanded rivers that consistently

required portages, and whether those portages were so minimal that they did not interrupt an otherwise navigable segment of that river.

II. POST-STATEHOOD NAVIGATION EVIDENCE CAN DEMONSTRATE SUSCEPTIBILITY

The U.S. Supreme Court stated that evidence of present-day, primarily recreational boating must be "confined to that which shows the river could sustain the kinds of commercial use that, as a realistic matter, might have occurred at the time of statehood." *PPL Montana,* 132 S.Ct. at 1233. Navigability at statehood concerns "the river's usefulness for 'trade and travel,' not for other purposes." *Id.* Evidence of present-day, primarily recreational use can be valid evidence of susceptibility for navigation at statehood. *Id.* The Court acknowledged that "'[E]xtensive and continued [historical] use for commercial purposes' may be the 'most persuasive' form of evidence, but the 'crucial question' is the potential for such use at the time of statehood, rather than 'the mere manner or extent of actual use.'" *Id.* at 1234 quoting *United States v. Utah,* 283 U.S. 64, 82-83 (1931). To demonstrate susceptibility to navigation, a party seeking to use present-day boating evidence must show whether the watercraft are "meaningfully similar" to those customarily used for trade and travel at statehood; and that the post-statehood condition of the river is not materially different from its physical condition at statehood. *Id.* Thus, in order for evidence of present day use to be meaningful, a river's physical condition could not have changed in ways that "substantially improve its navigability." *Id.* at 1233-34. Dams and diversions on Arizona's rivers made the rivers less susceptible to navigation, not more. Therefore, evidence of modern recreational boating on Arizona rivers may be more relevant to determining susceptibility to navigation than for the Montana rivers.

Based on the *PPL Montana* Court's instruction, ASLD recommends that ANSAC reopen the record to allow interested parties to present evidence regarding the types of watercraft

customarily used at statehood and the types of watercraft in use today for recreational boating. ANSAC then must specifically determine the types of watercraft in use at statehood and how those watercraft vary from the watercraft in use today, if at all.

III. STATE TITLE TO RIVERBEDS MUST BE DETERMINED AT STATEHOOD IN THE RIVER'S ORDINARY AND NATURAL CONDITION

The *PPL Montana* Court confirmed that title navigability must be determined at statehood in a watercourse's "natural and ordinary condition." *PPL Montana,* 132 S.Ct. at 1228. The Court pointed out that the "inquiry depends only on navigation and not on interstate travel." *Id.* at 1229, 1233 (for susceptibility analysis, not only trade and travel must be determined, but also the watercourse's natural and ordinary condition). In *State ex rel. Winkleman v. Arizona Navigable Stream Adjudication Com'n,* 224 Ariz. 230, 240, 229 P.3d 242, 252 (App. 2010) (*"Winkleman"),* the court held that ANSAC failed to evaluate the Lower Salt River's ordinary and natural condition in light of the numerous dams, canals, and other diversions other than Roosevelt Dam. The Court of Appeals directed ANSAC to determine "what the River would have looked like on February 14, 1912 in its ordinary (i.e., usual, absent major flooding or drought) and natural (i.e., without man-made dams, canals, or other diversions) condition." *Winkleman,* 224 Ariz. at 241, 229 P.3d at 253. The *Winkleman* decision is still valid and controlling on ANSAC's determinations and proceedings. Thus, ANSAC must evaluate Arizona's rivers at statehood as if there had been no dams and diversions, and without flood or drought conditions.

The U.S. Supreme Court's note that Montana's long failure to assert title navigability is some evidence supporting the conclusion that the river segments were nonnavigable is not only dicta, but also not persuasive to these proceedings. *PPL Montana,* 132 S.Ct. at 1235. Arizona Courts have long recognized Arizona's valid right and valuable claim to the streambeds beneath

its navigable rivers. *Winkleman,* 224 Ariz. at 234, ¶ 2, 229 P.3d 246, ¶ 2 ("In 1985, the State claimed title to the beds of all Arizona watercourses that were navigable when Arizona became a state.").

In conclusion, the United States Supreme Court's *PPL Montana* decision is relevant to the proceedings now before the Commission. ANSAC should examine each watercourse to determine how the watercourse should be segmented, and then whether each of the identified segments is navigable. As stated by the Court, "[a]n analysis of segmentation must be sensibly applied." *PPL Montana,* 132 S.Ct. at 1231. Finally and most importantly, the navigability of each river must be determined based on its own facts. *See United States v. Appalachian Elec. Power Co.,* 311 U.S. 377, 404, 61 S.Ct. 291, 297 (1940) (there is no "formula which fits every type of stream under all circumstances and at all times."). Based on the *PPL Montana* decision, the Department recommends that ANSAC reopen the record for parties to provide evidence and testimony for segmentation purposes and for present-day recreational use for susceptibility purposes.

DATED: June 8, 2012.

THOMAS C. HORNE
Attorney General

Laurie Hachtel

Laurie A. Hachtel
Joy L. Hembrode
Assistant Attorneys General
Attorneys for the Arizona State Land Department

ORIGINAL AND SIX COPIES of the foregoing
hand-delivered for filing this 8th day of
June, 2012, to:

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

COPY of the foregoing mailed this 8th day of
June, 2012, to:

Fred E. Breedlove III
Squire Sanders
1 E. Washington St., Suite 2700
Phoenix, Arizona 85004
Attorney for Arizona Navigable Stream Adjudication Commission

Joy Herr-Cardillo
AZ Center for Law in the Public Interest
2205 East Speedway Blvd.
Tucson, AZ 85719-0001
Attorneys for Defenders of Wildlife, Donald Steuter, Jerry Van Gasse and Jim Vaaler

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

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

John Helm
Sally Worthington
Helm, Livesay & Worthington, Ltd.
1619 East Guadalupe, Suite One
Tempe, AZ 85283-3970
Attorneys for Maricopa County

Julie M. Lemmon
1095 W Rio Salado Parkway, Suite 102
Tempe, AZ 85281
Attorney for Flood District of Maricopa County

Linus Everling
Thomas L. Murphy
Gila River Indian Community
P.O. Box 97
Sacaton, AZ 85247
Attorneys for Gila River Indian Community

William H. Anger, Esq.
Engelman Berger, P.C.
Security Title Plaza, Suite 700
3636 North Central Avenue
Phoenix, Arizona 85012
Attorney for City of Mesa

Charles L. Cahoy, Esq.
Assistant City Attorney
City of Tempe
21 East Sixth Street, Suite 201
Tempe, AZ 85281
Attorney for City of Tempe

Cynthia S. Campbell, Esq.
City of Phoenix
200 West Washington, #1300
Phoenix, AZ 85003-1611
Attorney for City of Phoenix

Carla A. Consoli, Esq.
Lewis & Roca, LLP
40 North Central Avenue
Phoenix, AZ 85004-4429
Attorney for CEMEX CEMENT, INC.

Steven L. Wene, Esq.
Moyes Sellers & Sims
1850 N Central Ave, #1100
Phoenix, AZ 85004
Attorneys for Board of Regents/Arizona State University

Michael J. Pearce, Esq.
Maguire & Pearce PLLC
2999 N 44th St. Suite 630
Phoenix, AZ 85018-0001
Attorney for Home Builders Association of Central Arizona

James T. Braselton, Esq.
Mariscal, Weeks, McIntyre & Friedlander
2901 North Central Avenue, #200
Phoenix, AZ 85012-2705
Attorney for Land Title Association of Arizona

Joe Sparks
John H. Ryley
The Sparks Law Firm, P.C.
7503 First Street
Scottsdale, AZ 85251-4201
Attorneys for San Carlos Apache Tribe

Susan B. Montgomery
Robyn Interpreter
Montgomery & Interpreter P.L.C.
4835 East Cactus Road, Suite 210
Scottsdale, AZ 85254
Attorneys for Yavapai-Apache Nation

Sandy Bahr
202 East McDowell Road, Ste. 277
Phoenix, AZ 85004
For the Sierra Club

William Taebel
P.O. Box 1466
Mesa, AZ 85211-1466
Attorney for City of Mesa

Harlan C. Agnew
Pima County Attorney
32 North Stone Avenue, Suite 2100
Tucson, Arizona 85701
Attorney for Pima County

Amy Langenfeld
Ryley, Carlock & Applewhite
One N. Central Ave., Suite 1200
Phoenix, AZ 85004

Chuck Chambers
Cochise Graham Cattlegrowers
6842 N. Lee Station Rd.
Douglas, AZ 85607

Daniel Moore
Bureau of Land Management
12661 E. Broadway
Tucson, AZ 85748

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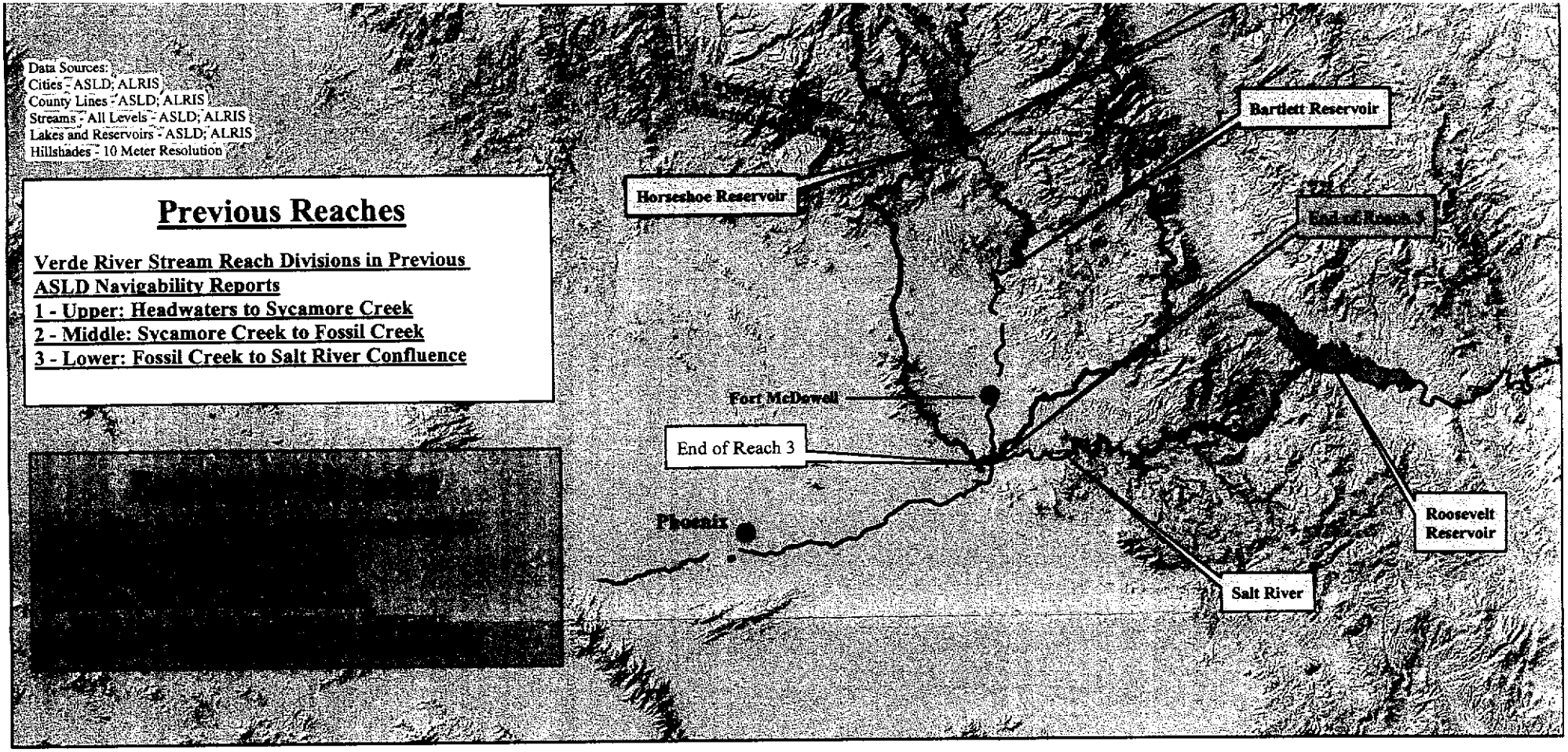
ATTACHMENT "C"



Legend

- Watershed Boundary
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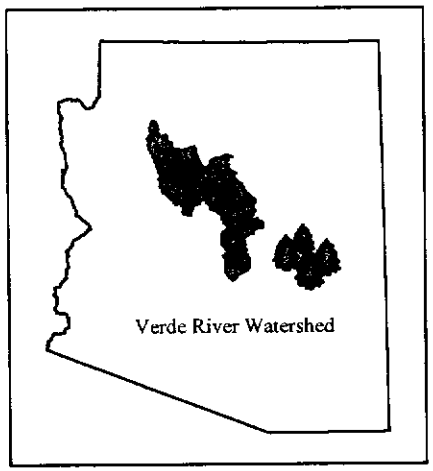
- Fossil Creek
- Verde River
- Salt River
- Bartlett Reservoir
- Horseshoe Reservoir
- Roosevelt Reservoir



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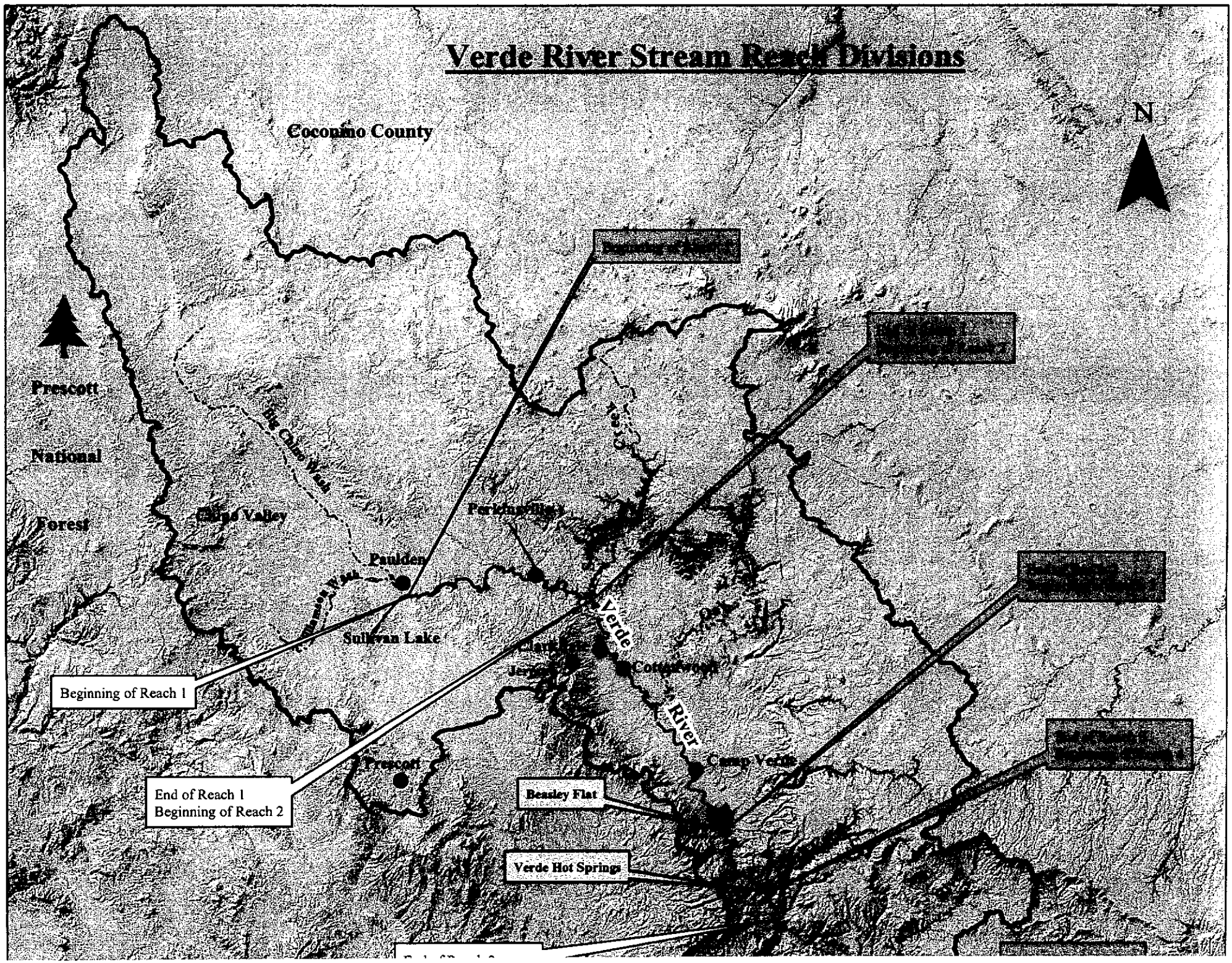
Cheryl Doyle, 8/9/2012


Verde River Stream Reach Divisions
Coconino County
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Prescott
National
Forest
Big Chino Wash
Chino Valley
Paulden
Sullivan Lake
Beginning of Reach 1
Verde
River
Prescott
End of Reach 1
Beginning of Reach 2
Camp Verde
Beasley Flat
Verde Hot Springs