

## **APPENDIX A**

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### **Historic Stocking Records, Past and Ongoing Wildlife Conservation Actions, and Proposed Stocking Sites and Species**



**Table A. Records of the original authorized stockings in Arizona by species for those records where stocking source is known.**

Common Name	Scientific Name	First Stocked	Origin
American shad	<i>Alosa sapidissima</i>	1883	Fisheries Commission
Bigmouth buffalo	<i>Ictiobus cyprinellus</i>	1917	Fisheries Commission
Yellow bass (barfish)	<i>Morone mississippiensis</i>	1929	Fisheries Commission
Spotted bass	<i>Micropterus punctulatus</i>	1941	Arizona Game and Fish Department (AGFD)
Redear sunfish	<i>Lepomis microlophus</i>	1948	AGFD*
Threadfin shad	<i>Dorosoma petenense</i>	1955	AGFD (from Tennessee)
Kokanee	<i>Oncorhynchus nerka</i>	1957	AGFD
Tilapia species	<i>Tilapia spp.</i>	1959	AGFD–Page Springs Hatchery
Northern pike	<i>Esox lucius</i>	1965	U.S. Department of the Interior Fish and Wildlife Service
Bairdiella (croaker)	<i>Bairdiella icistia</i>	1967	AGFD–Sterling Springs Hatchery
Orangemouth corvina	<i>Cynoscion xanthulus</i>	1967	AGFD–Sterling Springs Hatchery
Sargo	<i>Anisotremus davidsonii</i>	1967	AGFD–Sterling Springs Hatchery
White sturgeon	<i>Acipenser transmontanus</i>	1967	AGFD
Redbelly tilapia	<i>Tilapia zillii</i>	1968	University of Arizona
Striped bass	<i>Morone saxatilis</i>	1969	California and the AGFD–Page Springs Hatchery
Muskie	<i>Esox masquinongy</i>	1973	Wisconsin
Blue tilapia	<i>Tilapia aurea</i>	1975	AGFD–Bubbling Ponds Hatchery

\* = Suspected source based on California records

**Table B. Records of the first documentation of stocking by species in Arizona where the stocking source is unknown or suspected (not verified), and the first year of known stockings with known stocking source, if applicable.**

Species Name	Scientific Name	First Documented	Suspected Source	First Year of Known Stocking Source	Subsequent Stocking Source
Carp	<i>Cyprinus carpio</i>	1880	Fisheries Commission		
Largemouth bass	<i>Micropterus salmoides</i>	1896	Fisheries Commission	1964	Arizona Game and Fish Department (AGFD)–Page Springs Hatchery
Rock bass	<i>Ambloplites rupestris</i>	1896	Fisheries Commission		
Rainbow trout	<i>Oncorhynchus mykiss</i>	1897	Fisheries Commission	1936	AGFD–Tonto Creek Hatchery
Cutthroat trout	<i>Oncorhynchus clarkii</i>	1899	Fisheries Commission	1965	AGFD–Sterling Springs Hatchery
Black crappie	<i>Pomoxis nigromaculatus</i>	1902	Fisheries Commission	1964	AGFD–Page Springs Hatchery
Brook trout	<i>Salvelinus fontinalis</i>	1902	Fisheries Commission	1964	AGFD–Tonto Creek Hatchery
White crappie	<i>Pomoxis annularis</i>	1902	Fisheries Commission	1991	AGFD–Bubbling Ponds Hatchery
Channel catfish	<i>Ictalurus punctatus</i>	1904	Fisheries Commission	1964	U.S. Department of the Interior Fish and Wildlife Service (FWS) and AGFD–Page Springs Hatchery
Black buffalo	<i>Ictiobus niger</i>	1917	Fisheries Commission		
Yellow perch	<i>Perca flavescens</i>	1918	Fisheries Commission	1965	McClelland Lake
Black bullhead catfish	<i>Ameiurus melas</i>	1919	Fisheries Commission*		
Smallmouth bass	<i>Micropterus dolomieu</i>	1920	Fisheries Commission	1970	Black River
Brown trout	<i>Salmo trutta</i>	1924	Fisheries Commission	1964	AGFD–Page Springs Hatchery
Green sunfish	<i>Lepomis cyanellus</i>	1925	Fisheries Commission*		
Mosquitofish	<i>Gambusia affinis</i>	1925	Unknown	1968	AGFD
Golden shiner	<i>Notemigonus crysoleucas</i>	1929	Fisheries Commission		
Bluegill sunfish	<i>Lepomis macrochirus</i>	1931	Fisheries Commission	1964	AGFD–Page Springs Hatchery
Sunfish hybrid	<i>Lepomis</i> spp. x <i>Lepomis</i> spp.	1931	Unknown	2008	Commercial
Brown bullhead catfish	<i>Ameiurus nebulosus</i>	1935	Fisheries Commission*		
Arctic grayling	<i>Thymallus arcticus</i>	1939	Fisheries Commission	1965	AGFD–Sterling Springs Hatchery

**Table B. Records of the first documentation of stocking by species in Arizona where the stocking source is unknown or suspected (not verified), and the first year of known stockings with known stocking source, if applicable.**

Species Name	Scientific Name	First Documented	Suspected Source	First Year of Known Stocking Source	Subsequent Stocking Source
Flathead catfish	<i>Pylodictis olivaris</i>	1940	Unknown	1968	AGFD–Page Springs Hatchery
Plains red shiner	<i>Notropis lutrensis</i>	1948	Unknown	1965	AGFD–Page Springs Hatchery
Fathead minnow	<i>Pimephales promelas</i>	1950	Unknown**	1978	AGFD–Bubbling Ponds Hatchery
White bass	<i>Morone chrysops</i>	1951	Unknown	1975	Lake Pleasant
Walleye	<i>Sander vitreus</i>	1956	Unknown	1965	AGFD–Page Springs Hatchery
Kokanee	<i>Oncorhynchus nerka</i>	1957	FWS*	1964	AGFD–Tonto Creek Hatchery
Mozambique tilapia	<i>Tilapia mozambica</i>	1959	Unknown	1962	AGFD
Coho salmon	<i>Oncorhynchus kisutch</i>	1966	Unknown	1969	AGFD–Page Springs Hatchery

\* = Suspected source, based on California records

\*\* = First record of found fish in a bait tank on the Arizona side of the Colorado River in 1950

**Table C. Records of the first capture of a fish species stocked illegally (intentionally or unintentionally) through suspected sources: bait bucket releases, aquaria releases, and unknown (potentially angler introductions or by the Fisheries Commission).**

Species Name	Scientific Name	First Record	Suspected Source
Goldfish spp.	<i>Carassius</i> spp.	1925	Bait bucket releases, aquaria releases
Rio Grande killifish	<i>Fundulus zebrinus</i>	1937	Bait bucket releases, aquaria releases
Bream	<i>Acanthopagrus</i> spp.	1937	Unknown
Warmouth	<i>Lepomis gulosus</i>	1939	Unknown
Bullhead catfish	<i>Ameiurus</i> spp.	1941	Unknown
Redside shiner	<i>Richardsonius balteatus</i>	1948	Bait bucket releases
Mexican tetra	<i>Astyanax mexicanus</i>	1949	Aquaria releases
Pumpkinseed sunfish	<i>Lepomis gibbosus</i>	1949	Unknown
Blue catfish	<i>Ictalurus furcatus</i>	1950	Unknown
Sailfin molly	<i>Poecilia latipinna</i>	1951	Aquaria releases
Variable platyfish	<i>Xiphophorus variatus</i>	1962	Aquaria releases
Green swordtail	<i>Xiphophorus helleri</i>	1964	Aquaria releases
Guppy	<i>Poecilia reticulata</i>	1967	Aquaria releases
Mexican sailfin molly	<i>Poecilia velifera</i>	1967	Aquaria releases
Sacramento perch	<i>Archoplites interruptus</i>	1967	Unknown
Convict cichlid	<i>Archocentrus nigrofasciatus</i>	1968	Aquaria releases
Gizzard shad	<i>Dorosoma cepedianum</i>	2007	Federal hatchery (accidental)
Inland silverside	<i>Menidia beryllina</i>	2007	Unknown
Alligator gar	<i>Atractosteus spatula</i>	2008	Aquaria releases

**Table D. Past and ongoing AGFD conservation actions that target consultation and other special status species (incomplete list).**

<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Fish	Statewide Native Fish Monitoring	All native fish species	Before 2000
	Apache Trout Population Maintenance at North Canyon Creek (surveys and moving fish upstream over barriers)	Apache trout	Before 2000
	Apache Trout Stream Barrier Maintenance (10 barriers)	Apache trout	2000–present
	Apache Trout Stream Barrier Construction (seven barriers)	Apache trout	2000–present
	Stream Renovations for Apache Trout Reestablishment (nine streams)	Apache trout	2000–present
	Apache Trout Reestablishments (six streams stocked)	Apache trout	2000–present
	Livestock Exclusion and Fence Installation on Apache Trout Streams, Including Fence Maintenance (nine streams)	Apache trout	2000–present
	Evaluation of Apache Trout Habitat Protection Areas	Apache trout	2001–2004
	Bluehead Sucker Reestablishment in Walnut Creek	Bluehead sucker	2007–2009
	Desert Pupfish Reestablishments, Including Nonnative Removal and Habitat Improvements (more than 19 sites stocked)	Desert pupfish	Before 2000
	Evaluation and Planning for the Cave Creek Native Fish Population Expansion	Desert sucker, Sonoran sucker, longfin dace	2003–present
	Bear Canyon Gila Chub Reestablishment	Gila chub	2005
	Evaluation of Native Fish Reestablishment Potential of Grapevine Canyon	Gila chub	2008–present
	Romero Canyon Gila Chub Reestablishment	Gila chub	2005
	Sabino Canyon Gila Chub Emergency Salvage and Reestablishment	Gila chub	2003–2005
	T-4 Spring Habitat Improvements	Gila chub	Ongoing
	Cline Pond (Northwest Reservoir) Renovation	Gila chub and Gila topminnow	2009–present
	Transfer Gila Chub and Gila Topminnow to New Mexico Game and Fish to Reestablish in New Mexico	Gila chub and Gila topminnow	2007–present
	Evaluation of Renovation and Native Fish Reestablishment Potential of Devil’s Canyon	Gila chub and longfin dace	2008–present
	Evaluation of Renovation and Native Fish Reestablishment Potential of Turkey and O’Donnell Creek, Including Post Canyon	Gila chub, Gila topminnow, and longfin dace	2007–present

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Fish (continued)	The Nature Conservancy Lower San Pedro Preserve Native Fish Stockings	Gila chub, Gila topminnow, and desert pupfish	2008
	Bonita Creek Renovation and Native Fish Reestablishment	Gila chub, loach minnow, spikedace, desert pupfish, Gila topminnow, longfin dace, speckled dace, Sonora sucker, and desert sucker	2007–2008
	The Spawning and Culture of Gila Chub Research (Heritage Grant to University of Arizona [UA])	Gila chub	2003–2007
	Gila Topminnow Reestablishment, Including Nonnative Removal and Habitat Improvements (more than 23 sites stocked)	Gila topminnow	2000–present
	Boyce Thompson Arboretum Nonnative Fathead Removal	Gila topminnow and desert pupfish	2010
	Fresno Canyon Renovation and Native Fish Reestablishment	Gila topminnow and longfin dace	2006–2007
	Topminnow and Desert Pupfish Safe Harbor Program	Gila topminnow and desert pupfish	2008–present
	Raspberry Creek Gila Trout Reestablishment	Gila trout	2000
	Grapevine Creek Gila Trout Reestablishment	Gila trout	2009–present
	Frye Creek Gila Trout Reestablishment	Gila trout	2009–present
	Raspberry Creek Gila Trout Emergency Salvage and Reestablishment	Gila trout	2004
	Apache Trout Translocation from Coleman Creek (Gila Trout Recovery Action)	Gila trout	2005–present
	Reintroduction of Gila Trout ( <i>Oncorhynchus gilae gilae</i> ) in West Fork of Oak Creek (Heritage Grant to Federation of Fly Fishers)	Gila trout	2007–present
	Fossil Creek Renovation and Native Fish Reestablishment	Headwater chub, roundtail chub, Gila topminnow, loach minnow, razorback sucker, spikedace, desert sucker, Sonora sucker, speckled dace, and longfin dace	2003–present
	Statewide Conservation Agreement and Strategy	Headwater chub, roundtail chub, Zuni bluehead sucker, Little Colorado sucker, flannelmouth sucker, and bluehead sucker	Before 2000
	A Survey of the Aquatic Community at Fossil Creek, Arizona (Heritage Grant to Northern Arizona University [NAU])	Headwater chub, roundtail chub, Gila topminnow, loach minnow, razorback sucker, spikedace, desert sucker, Sonora sucker, speckled dace, longfin dace, and lowland leopard frog.	2002–2005

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Fish (continued)	Humpback Chub Translocation from Lower Little Colorado River to Little Colorado River Above Chute Falls	Humpback chub	2004–present
	Humpback Chub Translocation from Lower Little Colorado River to Shinumo Creek	Humpback chub	2009
	Removal of Nonnative Fish from Main Stem Colorado River near Mouth of Little Colorado River	Humpback chub, bluehead sucker, flannelmouth sucker, and speckled dace	2003–present
	West Leonard Canyon Little Colorado Spinedace Emergency Salvage and Reestablishment	Little Colorado spinedace	2001
	Little Colorado Spinedace Refugia at Raymond Wildlife Area and Site Renovation	Little Colorado spinedace	2008–present
	Little Colorado Spinedace Refugia at Winslow High School and Site Renovation	Little Colorado spinedace	2004–present
	Little Colorado Spinedace Refugia at Arizona Game and Fish Department (AGFD) Grasslands Wildlife Area	Little Colorado spinedace	2004–present
	West Chevelon Creek Little Colorado Spinedace Reestablishment	Little Colorado spinedace	2003–2007
	Bear Canyon Little Colorado Spinedace Reestablishment	Little Colorado spinedace	2004–2005
	Dane Canyon Little Colorado Spinedace Reestablishment	Little Colorado spinedace	2004–2005
	Yaeger Canyon Little Colorado Spinedace Reestablishment	Little Colorado spinedace	2004–2005
	Survey Little Colorado Spinedace Habitat and Assess Reestablishment Sites	Little Colorado spinedace	Before 2000
	Survey Historic Spikedace and Loach Minnow Habitat and Acquire Rare Populations for Refugia	Loach minnow and spikedace	2006–present
	Spikedace and Loach Minnow Propagation and Refugia at Bubbling Ponds	Loach minnow and spikedace	2007–present
	Hot Springs Canyon Native Fish Reestablishment	Loach minnow and spikedace	2008–present
	Meda/Tiaroga Data Assembly	Loach minnow and spikedace	2007–present
	Predator Depletion on Blue River	Loach minnow, desert sucker, Sonoran sucker, longfin dace, speckled dace, and narrow-headed garter snake	2009
	Redfield Canyon Native Fish Reestablishment	Loach minnow, spikedace, Gila topminnow, and desert pupfish	2008–present

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Fish (continued)	Arnett Creek Longfin Dace Reestablishment	Longfin dace	2006–2007
	Mineral Creek Longfin Dace Reestablishment	Longfin dace	2006
	Razorback Sucker Rearing at Hualapai Elementary School and Kingman Academy of Learning	Razorback sucker	2008–present
	Razorback Sucker Stocking in Lower Colorado River	Razorback sucker	Before 2000
	Razorback Sucker and Bonytail Chub Rearing at Cervat Cliff Golf Course and Site Renovation	Razorback sucker and bonytail chub	2008–present
	Razorback Sucker and Colorado Pikeminnow Propagation (Bubbling Ponds)	Razorback sucker and Colorado pikeminnow	Before 2000
	Razorback Sucker and Colorado Pikeminnow Stocking in Verde River	Razorback sucker and Colorado pikeminnow	Before 2000
	Razorback Sucker Rearing at Mohave Community College and Site Renovation	Razorback sucker and longfin dace	2003–present
	Roundtail Chub Canal Salvage and Translocation to Salt River	Roundtail chub	2002–2003
	Eagle Creek Roundtail Chub Refugia Population Establishment and Propagation (Bubbling Ponds)	Roundtail chub	2009–present
	Predator Depletion on Upper Verde	Roundtail chub	2000–present
	Roundtail Propagation (Bubbling Ponds)	Roundtail chub	2007–present
	Round tree Canyon Roundtail Chub Reestablishment	Roundtail chub	2008–2009
	Roundtail Refuge Pond at Boy Scout Camp	Roundtail chub	2008–present
	Roundtail Refuge Ponds at Southwest Academy	Roundtail chub	2008–present
	Ash Creek Native Fish Reestablishment	Roundtail chub, desert sucker, longfin dace, Sonora sucker, and speckled dace	2008–2009
	Stillman Lake Renovation and Native Fish Reestablishment	Roundtail chub, razorback sucker, Sonora sucker, and desert sucker	2002–present
	Speckled Dace Reestablishment into Apache Trout Streams	Speckled dace	2003–2007
	Developing An Interactive Model for Delineating Native Fish & Sport Fish Management Areas for Use in the Integrated Fisheries Management Plan (Heritage Grant to UA)	Native fish	2007–present
	Factors Influencing Distribution of Introduced Asian Tapeworm and Effects on Selected Southwestern Fishes Research	Native fish	2003–2005

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Fish (continued)	Suppression of Populations and Reproduction in a Nonnative Fish: Sensitivity of Various Life History Stages of Red Shiners to Environments Manipulation Research (Heritage Grant to NAU)	Native fish	2003–2005
Native Amphibians	Monitor Extant Chiricahua Leopard Frog Populations	Chiricahua leopard frog	2002–present
	Survey Chiricahua Leopard Frog Habitat and Assess Reestablishment sites (110 sites evaluated)	Chiricahua leopard frog	2000–present
	Identify and Implement Chiricahua Leopard Frog Habitat Improvement (14 locations)	Chiricahua leopard frog	2002–present
	Chiricahua Leopard Frog Reestablishment (32 sites stocked)	Chiricahua leopard frog	2002–present
	Chiricahua Leopard Frog Phylogenetic Research	Chiricahua leopard frog	2004–present
	Chiricahua Leopard Frog Captive Rearing Program	Chiricahua leopard frog	2000–present
	Chytrid Fungus Research and Monitoring	Chiricahua leopard frog, Northern leopard frogs, Arizona treefrogs, Sonoran tiger salamander, and other native amphibians	2004–present
	Nonnative Removal in Chiricahua Leopard Frog Recovery Areas (25 sites)	Chiricahua leopard frog, Arizona treefrog, native fish, narrow-headed garter snake, Northern Mexican garter snake, and other native amphibians	2005–present
	Scotia Canyon Bullfrog Removal (Heritage Grant to the U.S. Department of Agriculture Forest Service [FS])	Chiricahua leopard frog	2009–present
	Aquatic Environment and the Persistence of the Frog Killing Fungus (Heritage Grant to Arizona State University [ASU])	Chiricahua leopard frog, Northern leopard frogs, Arizona treefrogs, Sonoran tiger salamander, and other native amphibians	2009–present
	Novel Survey Methods to Increase Detectability of Rare Frogs in the Field (Heritage Grant to the State University of New York)	Chiricahua leopard frog, Northern leopard frogs, Arizona treefrogs, Sonoran tiger salamander, and other native amphibians	2010–present
	Northern Leopard Frog Breeding Site Protection Project (Heritage Grant to the Friends of the Forest)	Northern leopard frog	2007–2008
	Population Status and Population Genetics of Leopard Frogs in Northern Arizona	Northern leopard frog	2007–present
	Northern Leopard Frog Backyard Pond Project in Flagstaff	Northern leopard frog	2009
Northern Leopard Frog Monitoring on the Coconino National Forest and Other Extant Sites	Northern leopard frog	Before 2000	

**Table D. Past and ongoing AGFD conservation actions that target consultation and other special status species (incomplete list).**

<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Amphibians (continued)	Northern Leopard Frog Habitat Improvements on the Coconino National Forest (various projects including fences, berm repairs, and erosion control measures)	Northern leopard frog	Before 2000
	Historical Range Surveys to Assess Potential for Reestablishment of Northern Leopard Frogs	Northern leopard frog	Before 2000
	House Rock Wildlife Area Ranch Northern Leopard Frog Refugium	Northern leopard frog	2005–present
	Sonoran Tiger Salamander Range-wide Monitoring	Sonoran tiger salamander	Before 2000
	Amphibian Disease and Pathogen Pollution Research (Heritage Grant to ASU)	Sonoran tiger salamander, and other native amphibians	2005–2009
Native Semi-aquatic Reptiles	Northern Mexican Garter Snake Radiotelemetry Study at Bubbling Ponds Fish Hatchery	Northern Mexican garter snake	2009–present
	Northern Mexican Garter Snake Monitoring and Population Study at Bubbling Ponds Fish Hatchery	Northern Mexican garter snake	2007–present
	Northern Mexican Garter Snake Population Study in San Rafael Valley	Northern Mexican garter snake	2008
	Demography of the Mexican Garter Snake Research (Heritage Grant to Virginia State University)	Northern Mexican garter snake	2007–present
	Narrow-headed and Northern Mexican Garter Snake Experimental Captive Breeding and Head Start Program	Narrow-headed garter snake and Northern Mexican garter snake	2007–present
	Garter Snake Conservation Working Group	Narrow-headed garter snake and Northern Mexican garter snake	2007–present
	Population Impacts on the Narrow Headed Garter Snakes Research (Heritage Grant to UA)	Narrow-headed garter snake	2007–present
	Narrow-Headed Garter Snake Population Genetics (Heritage Grant to ASU)	Narrow-headed garter snake	2007–present
	Status, Distribution, and Management Recommendations for Narrow-headed Garter Snakes Study (Heritage Grant to NAU)	Narrow-headed garter snake	Before 2000
	Monitoring Surveys and Radio Telemetry of Narrow-headed Garter Snakes in Oak Creek, Arizona (Heritage Grant to NAU)	Narrow-headed garter snake	2005–2006
	Surveys for <i>Thamnophis eques</i> and <i>Thamnophis rufipunctatus</i> in the Gila River Watershed of Arizona and New Mexico (Heritage Grant to ASU)	Narrow-headed garter snake and Northern Mexican garter snake	2005–2006

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Invertebrates	Candidate Conservation Agreement with Assurances for the Page Springsnail (Protects Habitat at 7 Occupied Sites)	Page springsnail	2009–present
	Page Springsnail Monitoring	Page springsnail	2001–present
	Page Springsnail Reestablishment at Bass House Springhead	Page springsnail	2009–present
	Toxicity of Rotenone to Page Springsnail Research	Page springsnail	2009
	Investigation of Captive Housing of Springsnails	Three Forks springsnail	2001–present
	Investigation of Captive Housing of Springsnails	Three Forks springsnail	2001–present
	Three Forks Crayfish Removal Experiment	Three Forks springsnail	2001–2004
	Conservation Genetics of Arizona Springsnails: Identifying Management Units and Regions of Endemism Research (Heritage Grant to ASU)	Page Spring snail, Three Forks springsnail, other native spring snails	2003–2005
Native Mammals	Inventory of the Meadow Jumping Mouse in Arizona Study (Heritage Grant to New Mexico State University)	New Mexico jumping mouse	2008–present
Native Birds	Arizona Bald Eagle Nestwatch Program	Bald eagle	Before 2000
	Arizona Bald Eagle Nest Survey	Bald eagle	Before 2000
	Occupancy and Reproductive Assessment Flights	Bald eagle	Before 2000
	Banding and Visual Identification Project	Bald eagle	Before 2000
	Arizona Bald Eagle Winter Count	Bald eagle	Before 2000
	Southwestern Eagle Management Committee	Bald eagle	Before 2000
	Monofilament Recovery Program	Bald eagle, native birds, and other wildlife	2002–present
	Long-Term Cuckoo Monitoring in Yuma Area (Heritage Grant to the Bureau of Land Management [BLM])	Yellow-billed cuckoo	2005–2006
	Yellow-billed Cuckoo Distribution and Abundance, Habitat Requirements, and Breeding Ecology in the Verde Valley Watershed of Arizona Study (Heritage Grant to NAU)	Yellow-billed cuckoo	2003–2008
	North American Marsh Bird Survey (statewide)	Yuma clapper rail, and other native birds	Before 2000
	Riparian Breeding Bird Survey (statewide)	Southwest willow flycatcher, yellow-billed cuckoos, and other riparian native birds	Before 2000
	Bill Williams and San Pedro rivers Southwest Willow Flycatcher Surveys	Southwest willow flycatcher, yellow-billed cuckoos, and other riparian native birds	2006–2010
Yuma East Wetland Habitat Improvements (Heritage Grant to the City of Yuma)	Yuma clapper rail, yellow-billed cuckoo, and other native riparian birds	2003–2004	

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Birds (continued)	Yuma West Wetland Improvements (Heritage Grant to the City of Yuma)	Yuma clapper rail, yellow-billed cuckoo, and other native riparian birds	2004
	Powers Butte Riparian Habitat Enhancement Project	Native riparian birds	2005–present
	McCormick Springs Elk Proof Fence Habitat Protection (Heritage Grant to the U.S. National Forest [USNF])	Native riparian birds	2005–2006
	Jacques Marsh Elk Proof Fence and Riparian Restoration Project (Heritage Grant to the USNF)	Native riparian birds	2005–2006
	Lower Colorado River Transient Burn Riparian Habitat Rehabilitation (Heritage Grant to the BLM)	Native riparian birds	2005
	Johnson Canyon Fence (Heritage Grant to the FS)	Native riparian birds	2006–2007
	The Arboretum at Flagstaff Wetland Habitat Enhancement (Heritage Grant to the Arboretum at Flagstaff)	Native riparian birds	2005–2006
	Mittry South Site Riparian Habitat Restoration Project (Heritage Grant to the BLM)	Native riparian birds	2006
	Riparian Enhancement of West Chevelon Canyon (Heritage Grant to the UA)	Native riparian birds	2008–2009
	Establishment of High Elevation Riparian Habitat Along a Channel Project (Heritage Grant to the FS)	Native riparian birds	2009–present
	Avian Community and Riparian Vegetation Response to Wetland Restoration (Heritage Grant to the U.S. Department of the Interior Fish and Wildlife Service [FWS])	Native riparian birds	2005–2006
	Effects of Groundwater Withdrawal on Avian Abundance and Species Richness in Riparian Areas of Southeastern Arizona Research (Heritage Grant to the UA)	Native riparian birds	2005–2006
	Riparian Restoration Effects in Southeast Arizona Study (Heritage Grant to the FWS)	Native riparian birds	2005–2006
	Avian Monitoring Agua Fria and the Salt/Gila Important Bird Areas (IBA's) (Heritage Grant to the Sonoran Audubon Society)	Native riparian birds	2006
Bird Population Monitoring at the Rio Salado Habitat Restoration Project (Heritage Grant to the City of Phoenix)	Native riparian birds	2007	

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<b>Guild</b>	<b>Project</b>	<b>Species Benefited</b>	<b>Duration</b>
Native Birds (continued)	Bird Inventory and Population Monitoring at Tuzigoot IBA (Heritage Grant to the Northern Arizona Audubon)	Native riparian birds	2006–2007
	Effects of Surface Water Depletion and Vegetation Health on Arizona’s Riparian Birds Research (Heritage Grant to UA)	Native riparian birds	2008–2009
	Enhance Survey Design and Implement Long Term Monitoring of Arizona’s Riparian Birds Research (Heritage Grant to the Great Basin Bird Observatory)	Native riparian birds	2009–present
	Arizona’s Important Bird Areas Program at Tucson Audubon Society (Heritage Grant to the Tucson Audubon Society)	Native riparian birds, other native birds	2005–2008
	Watson Woods IBA Inventory Component of the Arizona Bird Conservation Initiative (Heritage Grant to Archaeological Consulting Services, Ltd.)	Native riparian birds, other native birds	2004–2006
Multiple Taxa	Water Rights Acquisitions Program (the AGFD owns 276 water rights statewide)	Various wildlife species	Before 2000
	Land Acquisition Program (the AGFD owns 37 properties statewide totaling 7,785 acres of riparian habitat)	Riparian wildlife species, and other wildlife species	Before 2000
	Battles Between Non-Native Crayfish and Native Species in Fossil Creek, Arizona: Does Restoration Hinder or Help? Research (Heritage Grant to NAU)	Narrow-headed garter snake, Northern Mexican garter snake, Chiricahua leopard frog, other native amphibians and fish	2004–2009
	Biological Control of the Northern Crayfish ( <i>Orconectes virilis</i> ) Research (Heritage Grant to ASU)	Narrow-headed garter snake, Northern Mexican garter snake, Chiricahua leopard frog, other native amphibians and fish	2006–present
	Optimizing Control Methods for Northern Crayfish ( <i>Orconectes virilis</i> ) Research (Heritage Grant to UA)	Narrow-headed garter snake, Northern Mexican garter snake, Chiricahua leopard frog, other native amphibians and fish	2005–2009

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Colorado River–Havasus Creek	Havasus Creek Complex	Cataract Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Coconino	Cold- and warm-water fishery	Proposed Action (PA) Reduced Stocking Alternative (RSA)
		City Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Channel catfish Largemouth bass <sup>1</sup> Bluegill sunfish <sup>1</sup> Redear sunfish <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA
		Dogtown Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Coconino	Cold- and warm-water fishery	PA RSA
		Russell Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA RSA
		Santa Fe Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Coconino	Cold- and warm-water fishery	PA RSA
		Kaibab Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Colorado River– Yuma North	Yuma Complex	La Paz County Park Pond	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish <sup>1</sup> Bluegill sunfish <sup>1</sup>	La Paz	Cold- and warm-water fishery	PA RSA
		La Paz County Park Lagoon	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish	La Paz	Cold- and warm-water fishery	PA
Colorado River– Yuma South	Yuma Complex	Yuma West Wetland	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Largemouth bass Bluegill sunfish	Yuma	Cold- and warm-water fishery	PA RSA
		Hidden Shores <sup>2</sup>	Statewide Sport Fish Stocking Subprogram	Rainbow trout Largemouth bass <sup>1</sup> Channel catfish <sup>1</sup> Bluegill sunfish	Yuma	Cold- and warm-water fishery	PA RSA
Little Colorado River	Little Colorado River Above Lyman Complex	Hulsey Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA
		Pratt Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA RSA
		Nelson Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA
		Lyman Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA
		Carnero Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Little Colorado River Above Lyman Complex (continued)	Becker Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Apache trout Arctic grayling <sup>1</sup>	Apache	Cold-water fishery	PA RSA
	West Fork Little Colorado River	Mexican Hay Lake	Statewide Sport Fish Stocking Subprogram	Apache trout <sup>1</sup>	Apache	Cold-water fishery	PA RSA
		Lee Valley Lake	Statewide Sport Fish Stocking Subprogram	Apache trout Arctic grayling	Apache	Cold-water fishery	PA RSA
		Bunch Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Apache trout <sup>1</sup>	Apache	Cold-water fishery	PA RSA
		River Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Apache trout <sup>1</sup>	Apache	Cold-water fishery	PA RSA
		Tunnel Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Apache trout <sup>1</sup>	Apache	Cold-water fishery	PA RSA
		White Mountain Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA RSA
		Little Colorado River Greer	Statewide Sport Fish Stocking Subprogram	Apache trout Rainbow trout	Apache	Cold-water fishery	PA RSA
		Little Colorado River Sheep's Crossing	Statewide Sport Fish Stocking Subprogram	Apache trout	Apache	Cold-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Upper Little Colorado River	Little Ortega	Statewide Sport Fish Stocking Subprogram	Channel catfish	Apache	Warm-water fishery	PA RSA
		Concho Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Largemouth bass <sup>1</sup> Bluegill sunfish <sup>1</sup> Channel catfish	Apache	Cold- and warm-water fishery	PA RSA
	White Mountain Complex	Sponseller	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Apache	Cold-water fishery	PA RSA
		Silver Creek	Statewide Sport Fish Stocking Subprogram	Apache trout Rainbow trout	Navajo	Cold-water fishery	PA RSA
		Long Lake (Show Low)	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Navajo	Cold-water fishery	PA RSA
		Whipple	Statewide Sport Fish Stocking Subprogram	Channel catfish	Navajo	Warm-water fishery	PA RSA
		Little Mormon Lake	Statewide Sport Fish Stocking Subprogram	Channel catfish	Navajo	Warm-water fishery	PA RSA
	Schoen's Complex	Woodland Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish	Navajo	Cold- and warm-water fishery	PA RSA
		Rainbow Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Largemouth bass	Navajo	Cold- and warm-water fishery	PA RSA
		Show Low Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout Cutthroat trout Apache trout <sup>1</sup> Channel catfish Bluegill sunfish	Navajo	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Schoen's Complex (continued)	Fool Hollow Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Apache trout <sup>1</sup> Cutthroat trout Brook trout <sup>1</sup> Channel catfish Bluegill sunfish	Navajo	Cold- and warm-water fishery	PA RSA
		Scott's Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish	Navajo	Cold- and warm-water fishery	PA RSA
		Show Low Creek <sup>2</sup>	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Navajo	Cold-water fishery	PA RSA
		Mountain Meadow Recreational Complex <sup>3</sup>	Statewide Sport Fish Stocking Subprogram	Rainbow trout <sup>1</sup> Bluegill sunfish <sup>1</sup>	Navajo	Cold- and warm-water fishery	PA RSA
	Chevelon Creek Complex	Chevelon Canyon Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Arctic grayling	Coconino	Cold-water fishery	PA RSA
		Long Tom	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA RSA
		Willow Springs	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA RSA
		Woods Canyon	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA RSA
	Black Canyon Lake	Black Canyon Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout	Navajo	Cold-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Clear Creek Complex	Bear Canyon Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Arctic grayling	Coconino	Cold-water fishery	PA RSA
		C.C. Cragin (Blue Ridge Reservoir)	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA
		Knoll Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA
	Clear Creek Reservoir	Clear Creek Reservoir	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Navajo	Cold-water fishery	PA
	Jack's Canyon Complex	Soldiers Annex	Statewide Sport Fish Stocking Subprogram	Rainbow trout Largemouth bass Channel catfish Bluegill sunfish Yellow perch <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA
		Long Lake (Diablo)	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Walleye Largemouth bass Bluegill sunfish Yellow perch <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA
		Soldiers	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Largemouth bass Bluegill sunfish Yellow perch <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA
		Tremaine Lake <sup>3</sup>	Statewide Sport Fish Stocking Subprogram	Channel catfish <sup>1</sup> Bluegill sunfish <sup>1</sup> Largemouth bass <sup>1</sup> Redear sunfish <sup>1</sup>	Coconino	Warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Canyon Diablo Complex	Mud Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish	Coconino	Cold- and warm-water fishery	PA
		Kinnikinick Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Brown trout Brook trout Arctic grayling Cutthroat trout	Coconino	Cold- and warm-water fishery	PA
		Coconino Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Brook trout <sup>1</sup> Cutthroat trout Arctic grayling <sup>1</sup>	Coconino	Cold-water fishery	PA
		Morton	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA
		Ashurst Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Cutthroat trout Brown trout Brook trout Arctic grayling	Coconino	Cold- and warm-water fishery	PA
		Frances Short Pond	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish <sup>1</sup> Largemouth bass	Coconino	Cold- and warm-water fishery	PA RSA
	Walnut Creek Complex	Marshall Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout Arctic grayling	Coconino	Cold-water fishery	PA
		Mormon Lodge Pond	Statewide Sport Fish Stocking Subprogram	Rainbow trout Bluegill sunfish <sup>1</sup> Redear sunfish <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Little Colorado River (continued)	Walnut Creek Complex (continued)	Upper Lake Mary	Statewide Sport Fish Stocking Subprogram	Channel catfish Rainbow trout Brown trout Cutthroat trout Brook trout <sup>1</sup> Bluegill sunfish Redear sunfish	Coconino	Cold- and warm-water fishery	PA
		Lower Lake Mary	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish	Coconino	Cold- and warm-water fishery	PA
Riggs Flat	Riggs Flat Lake	Riggs Flat Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Brook trout White amur <sup>1</sup>	Graham	Cold- and warm-water fishery	PA RSA
Upper Gila River	Upper Gila	Cluff Pond #3	Statewide Sport Fish Stocking Subprogram	Rainbow trout White amur Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup> Black crappie	Graham	Cold- and warm-water fishery	PA RSA
		Dankworth Pond <sup>2</sup>	Statewide Sport Fish Stocking Subprogram	Rainbow trout White amur <sup>1</sup> Channel catfish Largemouth bass Black crappie Bluegill sunfish Redear sunfish	Graham	Cold- and warm-water fishery	PA RSA
		Frye Mesa Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Brook trout Gila trout	Graham	Cold-water fishery	PA RSA
		Graham County Fairgrounds	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish	Graham	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Upper Gila River (continued)	Upper Gila (continued)	Roper Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout White amur <sup>1</sup> Channel catfish Largemouth bass Black crappie Bluegill sunfish Redear sunfish	Graham	Cold- and warm-water fishery	PA RSA
Middle Gila River	Kearny	Kearny	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish <sup>1</sup> Largemouth bass Bluegill sunfish <sup>1</sup> Redear sunfish <sup>1</sup>	Pinal	Cold- and warm-water fishery	PA RSA
Lower Gila–Yuma	Lower Gila–Yuma Complex	Fortuna Pond	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Largemouth bass Bluegill sunfish	Yuma	Cold- and warm-water fishery	PA RSA
		Redondo/Yuma Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish	Yuma	Cold- and warm-water fishery	PA RSA
		Wellton Golf Course <sup>2</sup>	Statewide Sport Fish Stocking Subprogram	Rainbow trout <sup>1</sup> Channel catfish <sup>1</sup> Bluegill sunfish <sup>1</sup> Largemouth bass <sup>1</sup>	Yuma	Cold- and warm-water fishery	PA RSA
Luna Lake	Luna Lake	Luna Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Cutthroat trout	Apache	Cold-water fishery	PA
Agua Fria River	Agua Fria River Complex	Fain Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout Brown trout <sup>1</sup> Cutthroat trout <sup>1</sup> Bluegill sunfish Largemouth bass White crappie <sup>1</sup> Channel catfish	Yavapai	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Agua Fria River (continued)	Agua Fria River Complex (continued)	Horse Thief Basin	Statewide Sport Fish Stocking Subprogram	Channel catfish Largemouth bass Bluegill sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Lynx Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Bluegill sunfish Brown trout Brook trout Cutthroat trout Largemouth bass White crappie <sup>1</sup> Channel catfish	Yavapai	Cold- and warm-water fishery	PA RSA
Salt River	Black River Complex	Akre Lake	Statewide Sport Fish Stocking Subprogram	Apache trout Arctic grayling	Greenlee	Cold-water fishery	PA RSA
		Big Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout Cutthroat trout Apache trout	Apache	Cold-water fishery	PA
		Black River East Fork	Statewide Sport Fish Stocking Subprogram	Apache trout Rainbow trout	Apache	Cold-water fishery	PA
		Black River West Fork	Statewide Sport Fish Stocking Subprogram	Apache trout	Apache	Cold-water fishery	PA
		Crescent Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brook trout	Apache	Cold-water fishery	PA RSA
	Canyon Creek Complex	Canyon Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout	Gila	Cold-water fishery	PA RSA
	Workman Creek	Workman Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Gila	Cold-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Tonto Creek Complex	Tonto Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Gila	Cold-water fishery	PA
		Christopher Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Gila	Cold-water fishery	PA
		Haigler Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Gila	Cold-water fishery	PA
	Lower Salt Complex	Apache Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Walleye Smallmouth bass Largemouth bass Black crappie Channel catfish	Maricopa	Cold- and warm-water fishery	PA RSA
		Canyon Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Walleye Channel catfish Smallmouth bass Largemouth bass Black crappie	Maricopa	Cold- and warm-water fishery	PA
		Saguaro Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Walleye Smallmouth bass Black crappie Largemouth bass Channel catfish	Maricopa	Cold- and warm-water fishery	PA
		Tempe Town Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Maricopa	Cold-water fishery	PA
		Salt River Lower	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Maricopa	Cold-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Phoenix Urban Lakes	Alvord Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Chaparral Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Cortez Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Desert Breeze Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Desert West Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Encanto Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA
		Evelyn Hallman Pond	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Phoenix Urban Lakes (continued)	Kiwanis Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA
		Papago Ponds	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA
		Red Mountain Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA RSA
		Rio Vista Pond	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA
		Riverview Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA
		Steele Indian School Pond	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA
		Surprise Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm- water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Phoenix Urban Lakes (continued)	Veterans Oasis Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA RSA
		Water Ranch Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish Largemouth bass	Maricopa	Cold- and warm-water fishery	PA RSA
	Phoenix Fishing in the Neighborhood (FIN)	Crossroads Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish <sup>1</sup> Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA
		Freestone Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA RSA
		McQueen Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA
		Bonsall Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA
		Pacana Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Pinal	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Phoenix FIN (continued)	Granada Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Roadrunner Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Eldorado Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Indian School Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Vista del Camino Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Tempe Papago Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Water Treatment <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish <sup>1</sup> Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Salt River (continued)	Phoenix FIN (continued)	Discovery District Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish <sup>1</sup> Largemouth bass Bluegill sunfish Redear sunfish	Maricopa	Cold- and warm-water fishery	PA
		Selleh Park <sup>3</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Maricopa	Cold- and warm-water fishery	PA
Santa Cruz River	Upper Santa Cruz	Parker Canyon	Statewide Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Redear sunfish Bluegill sunfish	Cochise	Cold- and warm-water fishery	PA
		Patagonia	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Santa Cruz	Cold-water fishery	PA
		Peña Blanca	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Santa Cruz	Cold-water fishery	PA
	Middle Santa Cruz	Rose Canyon	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout	Pima	Cold-water fishery	PA
		Fagen Tank	Statewide Sport Fish Stocking Subprogram	Bluegill sunfish <sup>1</sup> Redear sunfish	Pima	Warm-water fishery	PA RSA
	Pantano Wash-Rillito River	Arivaca	Statewide Sport Fish Stocking Subprogram	Channel catfish Redear sunfish Bluegill sunfish	Pima	Warm-water fishery	PA RSA
	Tucson Santa Cruz Complex	Sahuarita Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish <sup>1</sup> Largemouth bass	Pima	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Santa Cruz River (continued)	Tucson Santa Cruz Complex (continued)	Kennedy Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish <sup>1</sup> Largemouth bass	Pima	Cold- and warm-water fishery	PA RSA
		Lakeside Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish <sup>1</sup> Largemouth bass	Pima	Cold- and warm-water fishery	PA RSA
		Silverbell Lake (and Archer Pond)	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish Bluegill sunfish Redear sunfish <sup>1</sup> Largemouth bass Black crappie	Pima	Cold- and warm-water fishery	PA RSA
	Tucson Santa Cruz FIN	Reid Park <sup>2</sup>	Fishing in the Neighborhood Subprogram	Rainbow trout <sup>1</sup> Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Pima	Cold- and warm-water fishery	PA RSA
Verde River	Big Chino Wash Complex	Granite Basin Lake	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish	Yavapai	Warm-water fishery	PA
		Garrett Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish Rainbow trout Black crappie <sup>1</sup> Bluegill sunfish	Coconino	Cold- and warm-water fishery	PA RSA
		Stone Dam	Statewide Sport Fish Stocking Subprogram	Channel catfish Bluegill sunfish Largemouth bass Redear sunfish <sup>1</sup>	Coconino	Warm-water fishery	PA RSA
		Shucking Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Channel catfish Rainbow trout <sup>1</sup> Black crappie <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Verde River (continued)	Big Chino Wash Complex (continued)	Presley Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Channel catfish Rainbow trout <sup>1</sup> Black crappie <sup>1</sup>	Coconino	Cold- and warm-water fishery	PA RSA
	Sycamore Complex	Elk Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout <sup>1</sup>	Coconino	Cold-water fishery	PA RSA
		JD Dam	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout	Coconino	Cold-water fishery	PA RSA
		White Horse Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout	Coconino	Cold-water fishery	PA RSA
		Middle Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout	Coconino	Cold-water fishery	PA RSA
		Perkins Tank	Statewide Sport Fish Stocking Subprogram	Rainbow trout Brown trout Brook trout Arctic grayling	Coconino	Cold-water fishery	PA RSA
	Middle Verde Complex	Mingus Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Bluegill sunfish <sup>1</sup> Black crappie <sup>1</sup>	Yavapai	Cold- and warm-water fishery	PA RSA
		Dead Horse Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Threadfin shad <sup>1</sup> Channel catfish Bluegill sunfish Largemouth bass Black crappie	Yavapai	Cold- and warm-water fishery	PA
		Verde River Middle	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Yavapai	Cold-water fishery	PA
		Oak Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Yavapai	Cold-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Verde River (continued)	Middle Verde Complex (continued)	Wet Beaver Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Yavapai	Cold-water fishery	PA
		West Clear Creek	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Yavapai	Cold-water fishery	PA
		Huffer Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Coconino	Cold-water fishery	PA RSA
	Granite Creek Complex	Watson Lake	Statewide Sport Fish Stocking Subprogram	Rainbow trout Black crappie Bluegill sunfish	Yavapai	Cold- and warm-water fishery	PA RSA
		Goldwater Lake	Statewide Sport Fish Stocking Subprogram	Largemouth bass Black crappie Bluegill sunfish Rainbow trout	Yavapai	Cold- and warm-water fishery	PA RSA
		Willow Creek Reservoir	Statewide Sport Fish Stocking Subprogram	Black crappie Bluegill sunfish Rainbow trout	Yavapai	Cold- and warm-water fishery	PA RSA
	Lower Verde River Complex	East Verde River	Statewide Sport Fish Stocking Subprogram	Rainbow trout	Gila	Cold-water fishery	PA
		Green Valley Lake	Urban Sport Fish Stocking Subprogram	Rainbow trout Channel catfish	Gila	Cold- and warm-water fishery	PA
	Bill Williams River	Santa Maria complex	Granite Mountain #1	Statewide Sport Fish Stocking Subprogram	Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery
Granite Mountain #2			Statewide Sport Fish Stocking Subprogram	Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
Bass Tank			Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Bill Williams River (continued)	Santa Maria complex (continued)	Blue Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA
	Burro Creek Complex	Carter Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish	Yavapai	Warm-water fishery	PA RSA
		Coor's Lake	Statewide Sport Fish Stocking Subprogram	Channel catfish Largemouth bass Black crappie Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Antelope Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Bar 37 Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish Largemouth bass <sup>1</sup> Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Harman Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish	Yavapai	Warm-water fishery	PA RSA
		Harmon Tank #2	Statewide Sport Fish Stocking Subprogram	Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Little Antelope Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		McElhaney Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA

**Table E. Proposed stocking sites and species under Proposed Action and Reduced Stocking Alternative.**

Subcatchment	Complexes	Stocking Sites	Applicable AGFD Subprogram	Stocking Species	County	Management Objective	Applicable Alternatives
Bill Williams River (continued)	Burro Creek Complex (continued)	Stubb's Tank	Statewide Sport Fish Stocking Subprogram	Largemouth bass Bluegill sunfish Redear sunfish <sup>1</sup>	Yavapai	Warm-water fishery	PA RSA
		Swale Tank	Statewide Sport Fish Stocking Subprogram	Channel catfish	Mohave	Warm-water fishery	PA RSA

Green = Stockings of species that would only occur in an attempt to recover a population in response to a partial or total loss

<sup>1</sup> Species not known to be present historically or currently in water body

<sup>2</sup> Site not recently stocked but stocked in the past by the AGFD

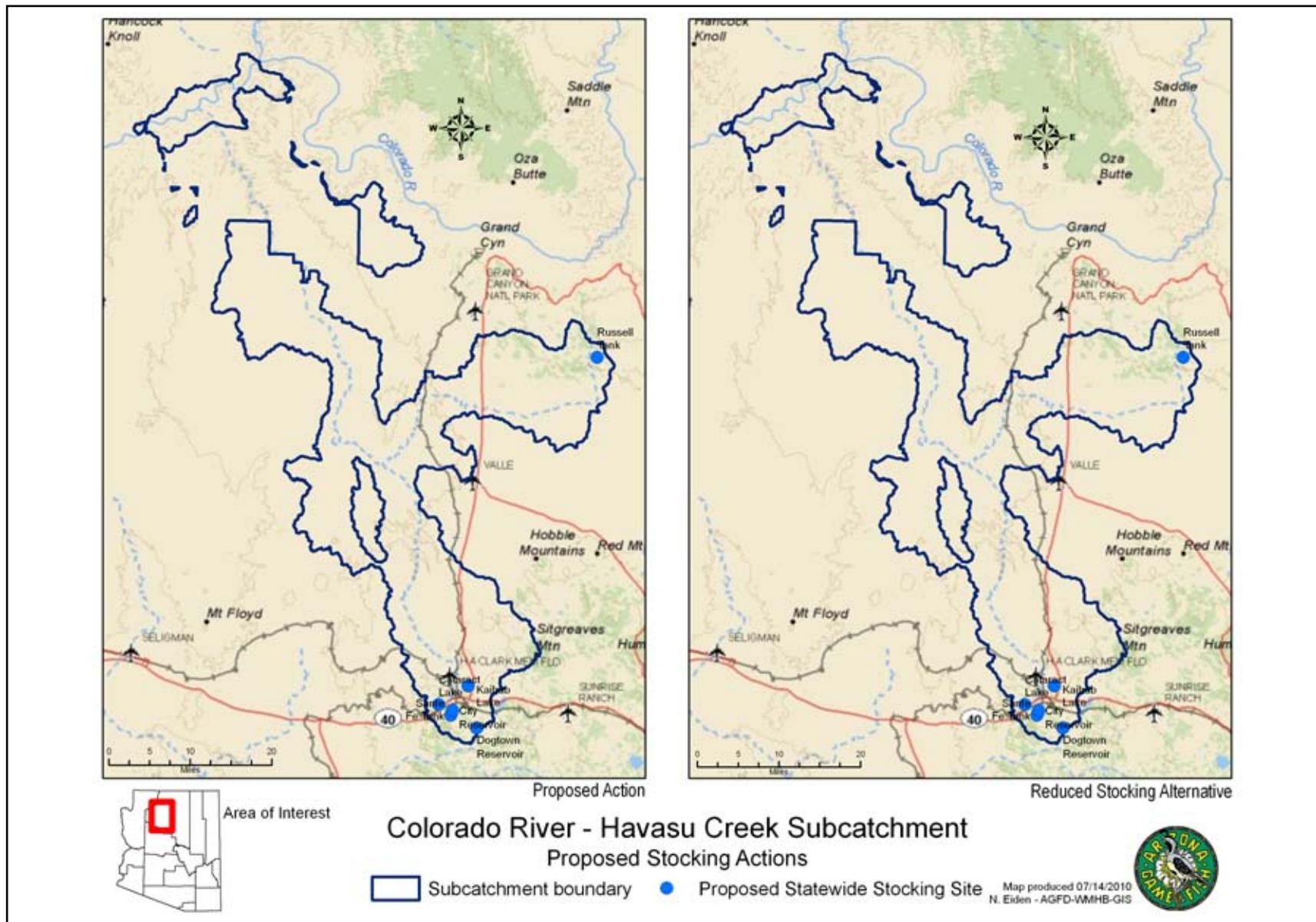
<sup>3</sup> Site not previously stocked by the AGFD, based on AGFD stocking records

## **APPENDIX B**

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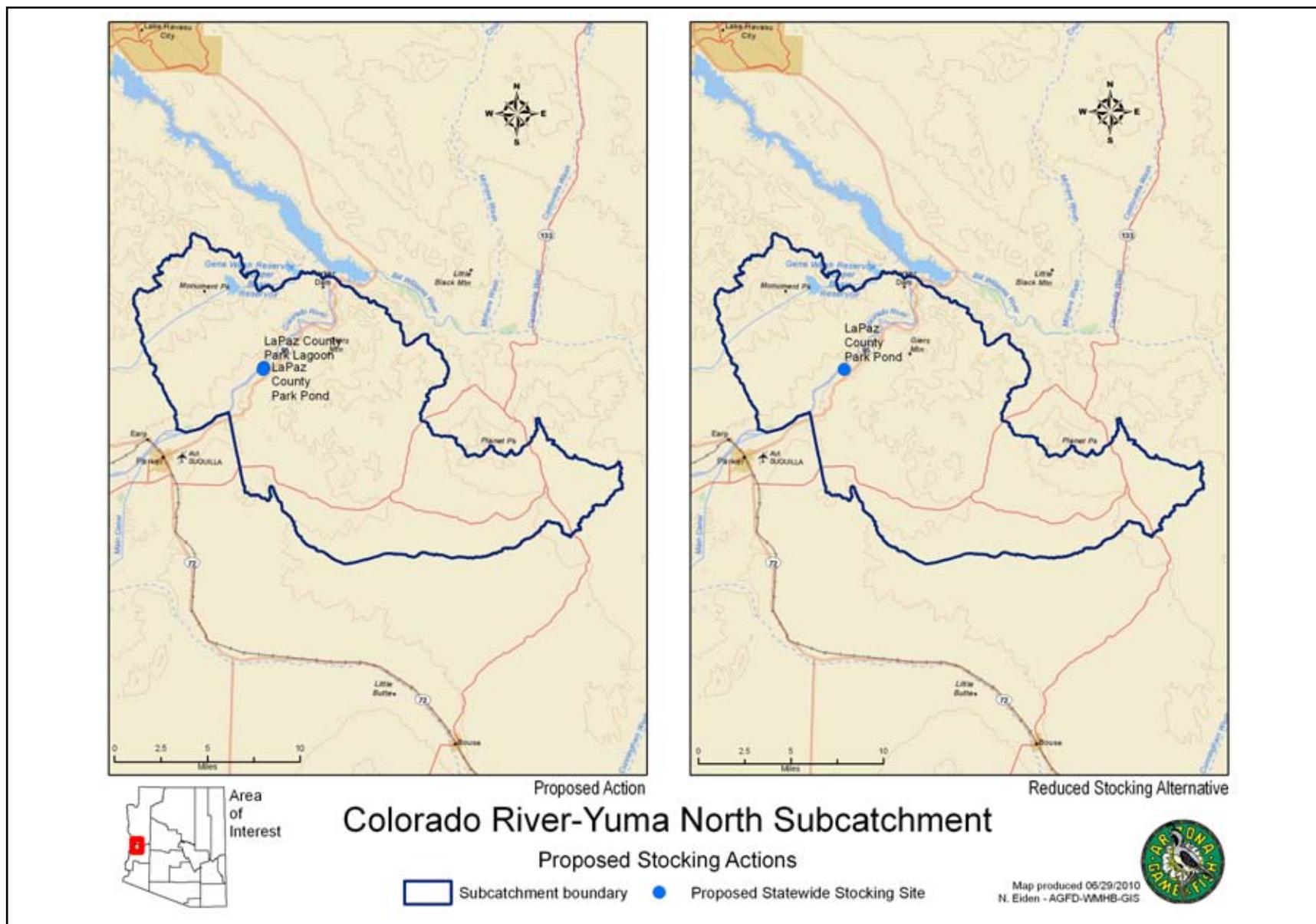
### **Individual Subcatchment Maps for the Proposed Action and the Reduced Stocking Alternative**





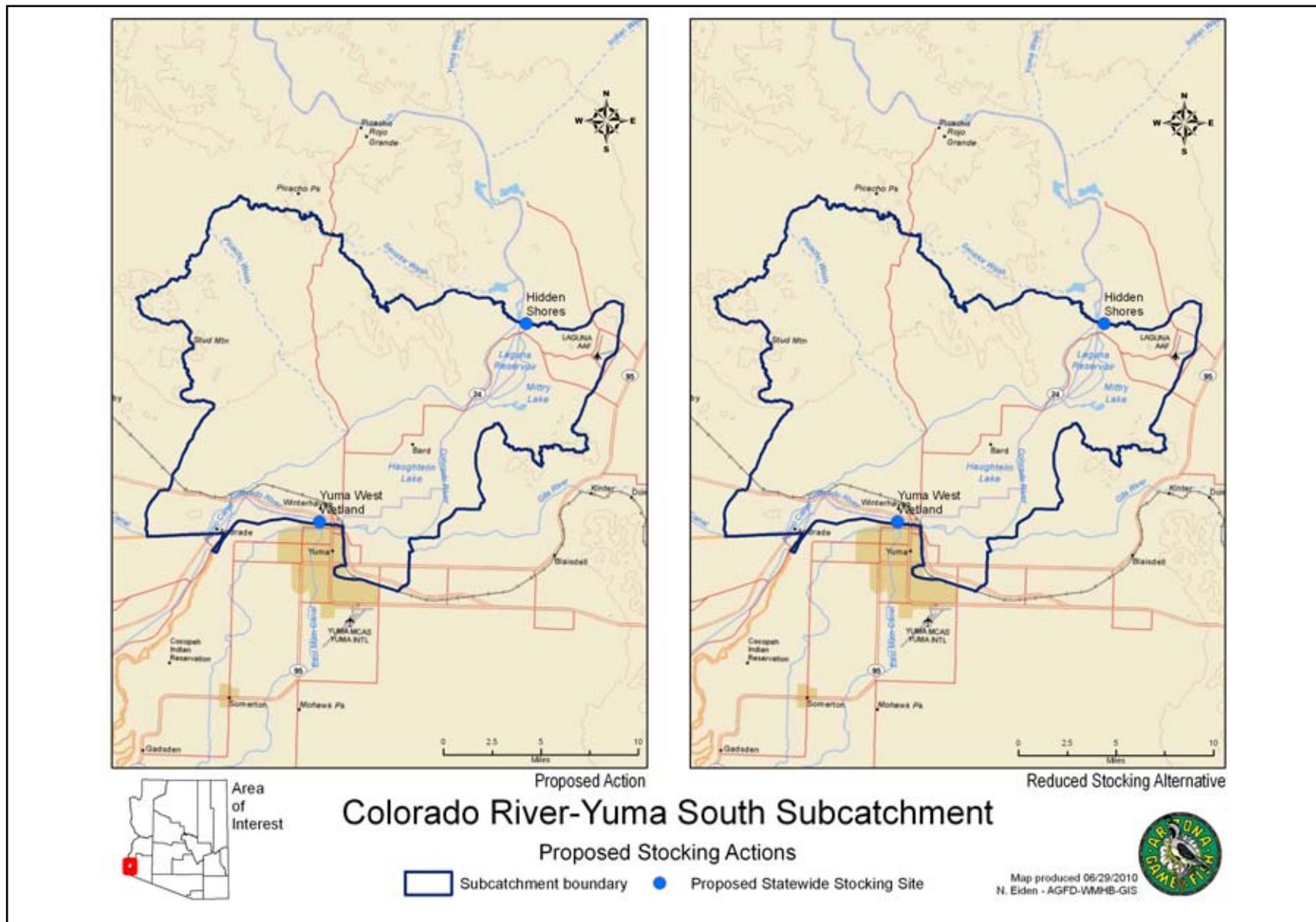
W/09-279/NEPA/EA/FigB1

**Figure B1. Colorado River—Havasu Creek Subcatchment.**



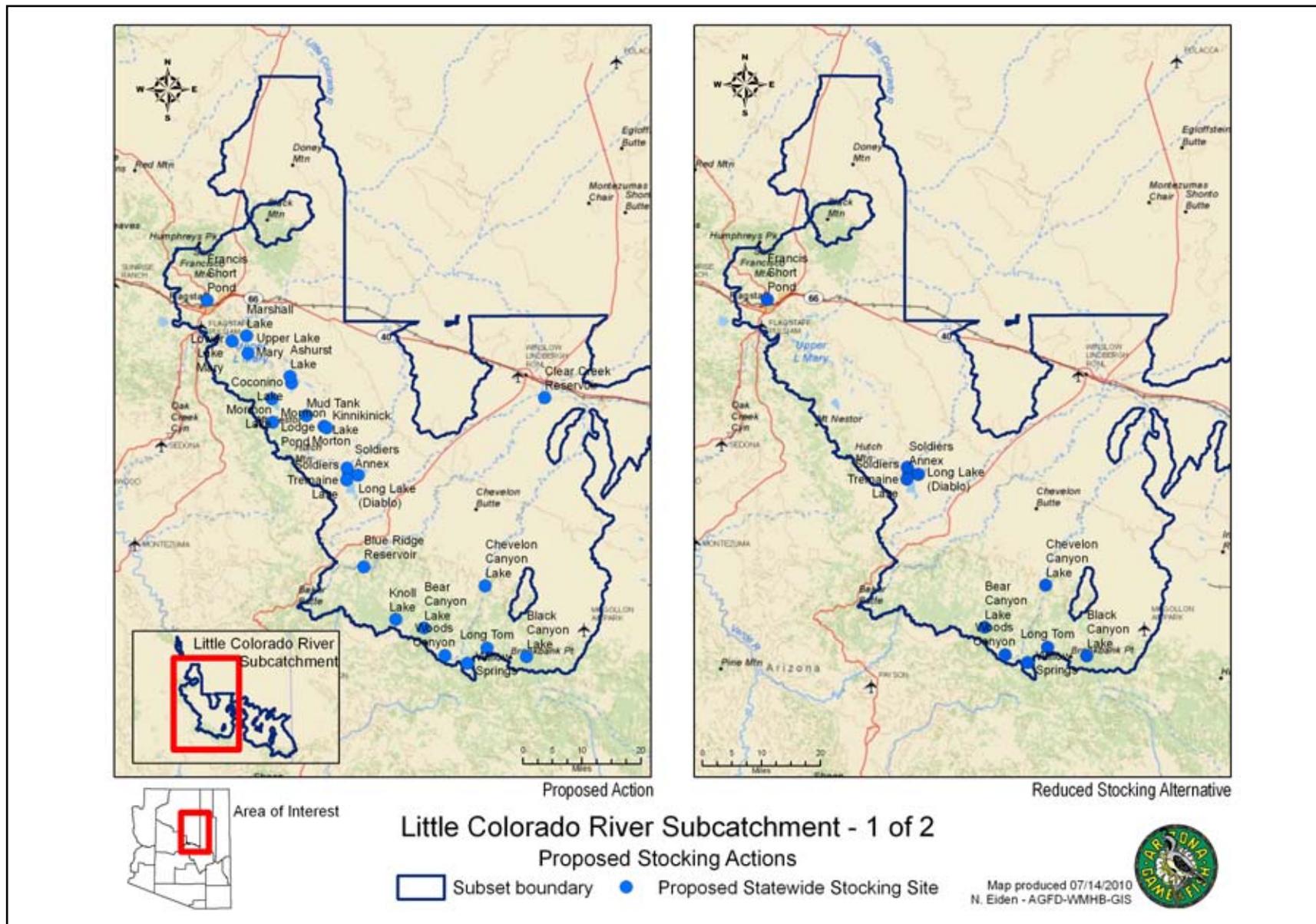
W/09-279/NEPA/EA/FigB2

**Figure B2. Colorado River—Yuma North Subcatchment.**



W/09-279/NEPA/EA/FigB3

**Figure B3. Colorado River—Yuma South Subcatchment.**



W/09-279/NEPA/EA/FigB4a

**Figure B4a. Little Colorado River Subcatchment—1 of 2.**

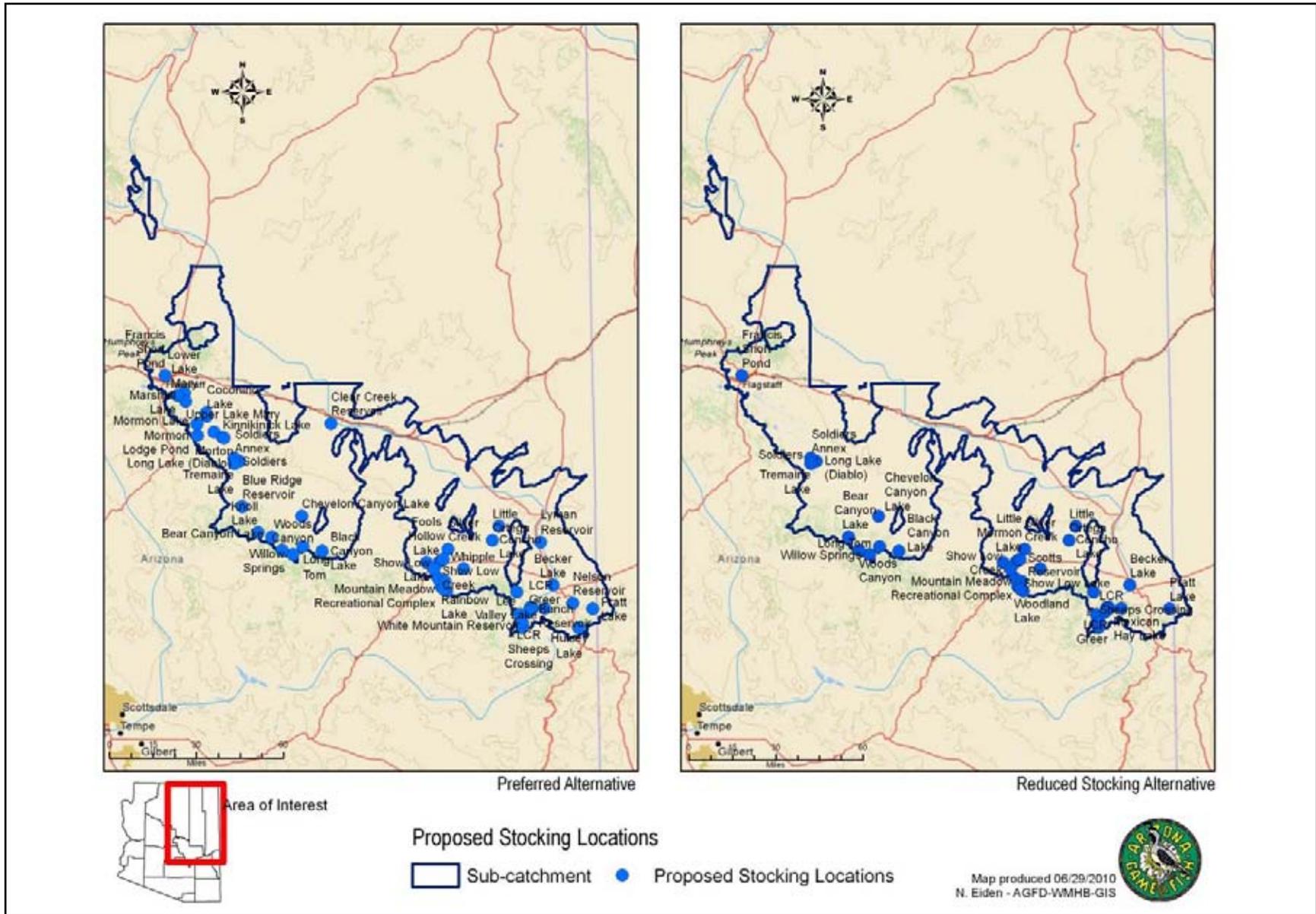
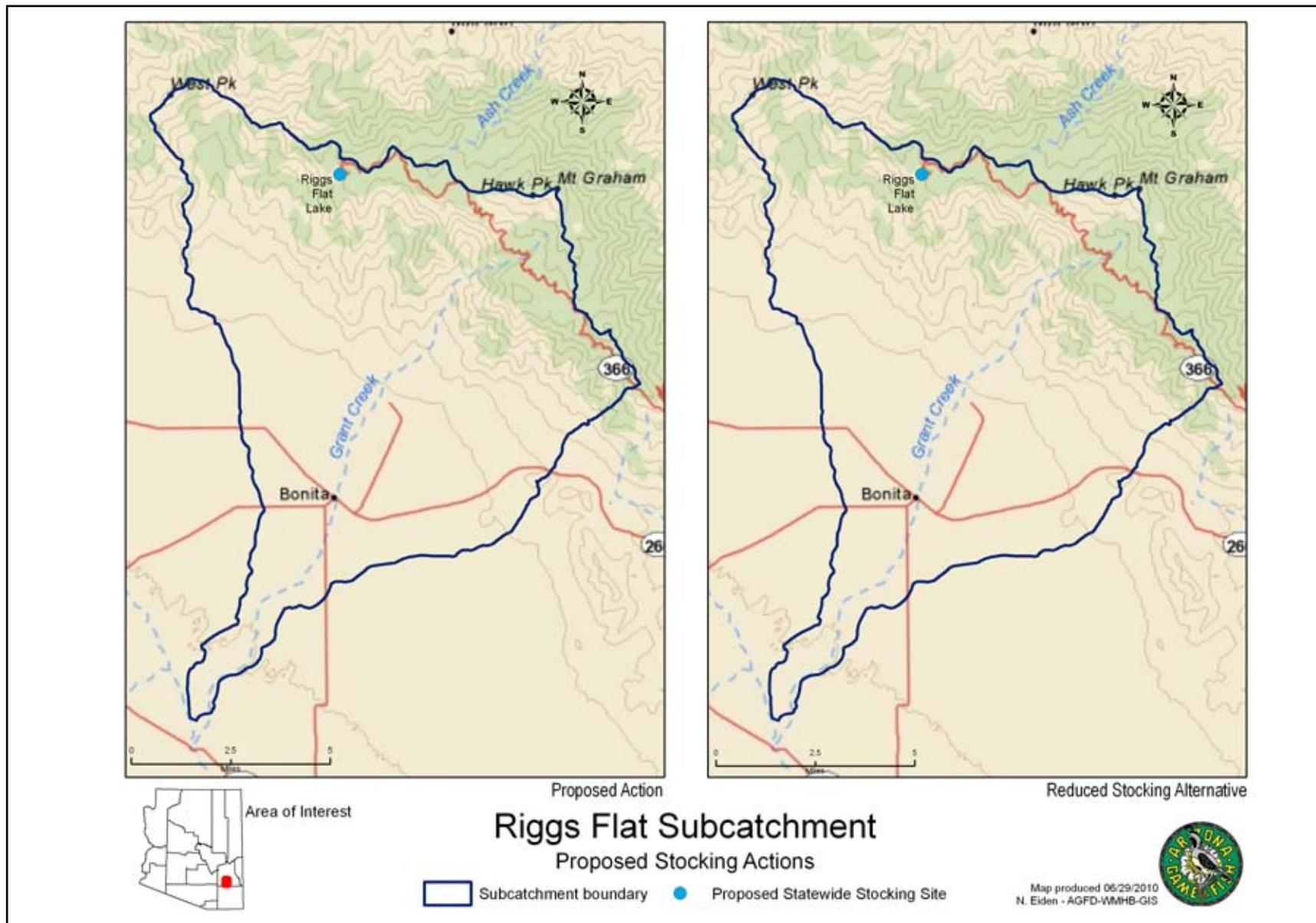
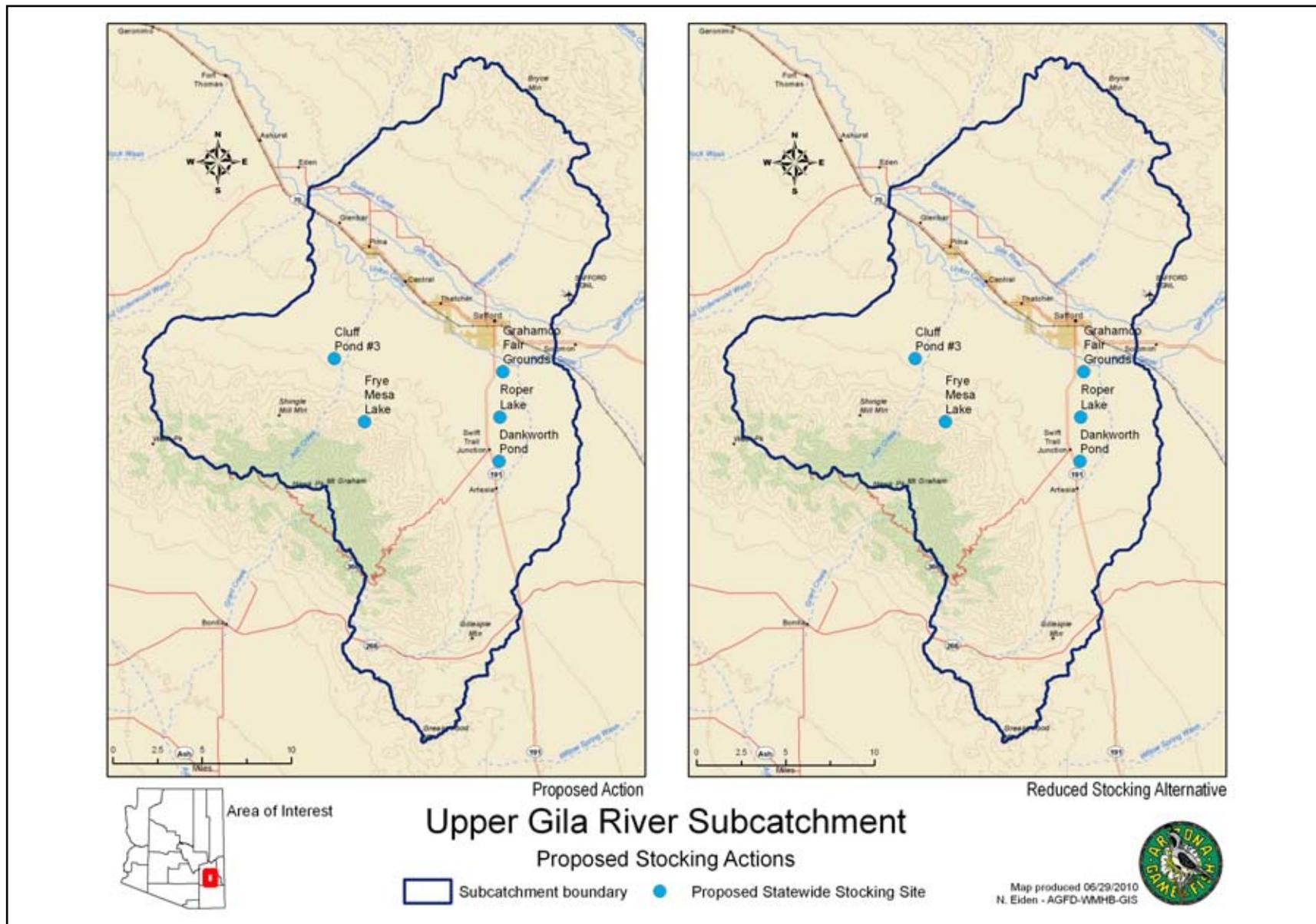


Figure B4b. Little Colorado River Subcatchment—2 of 2.



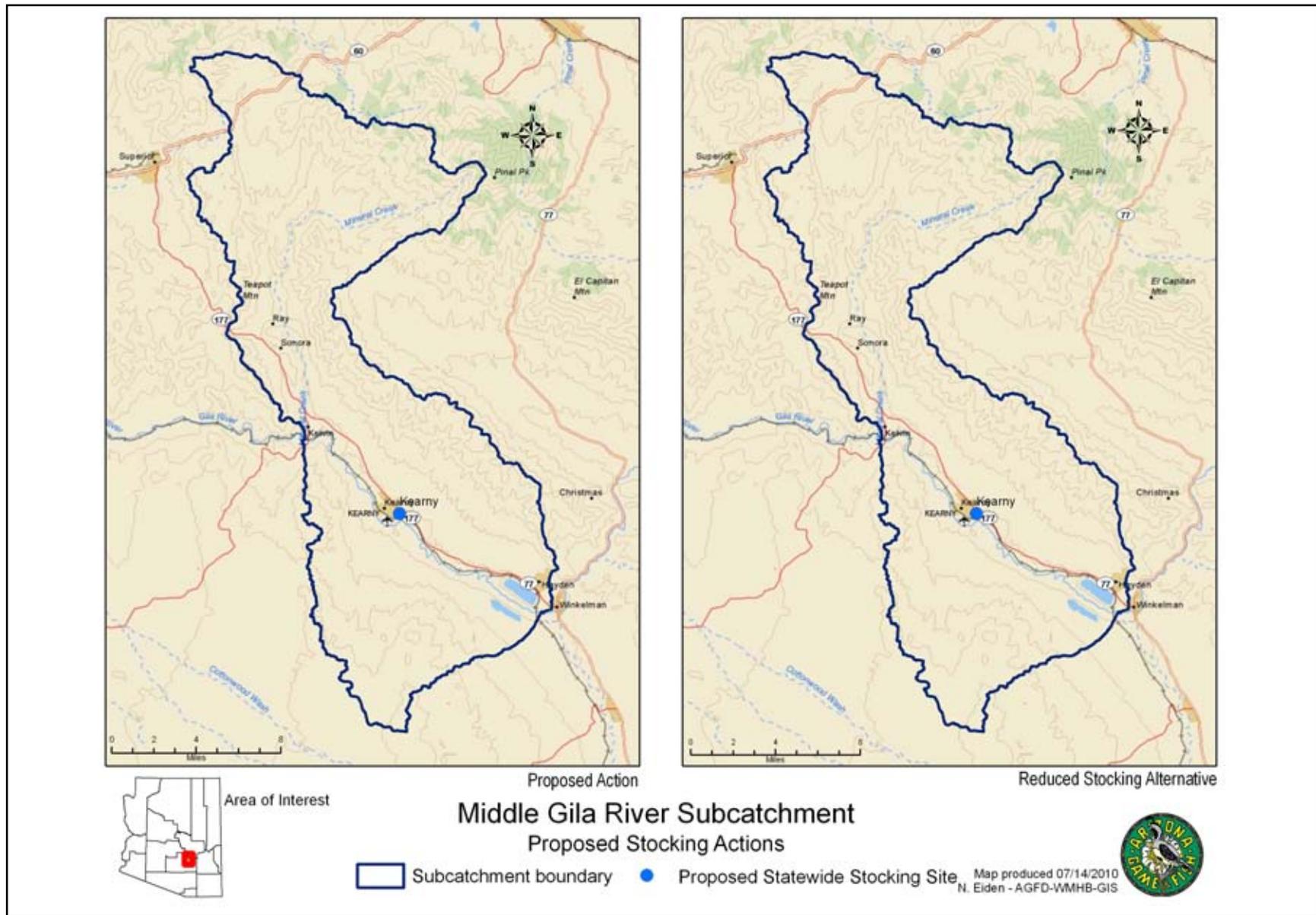
W/09-279/NEPA/EA/FigB5

**Figure B5. Riggs Flat Subcatchment.**



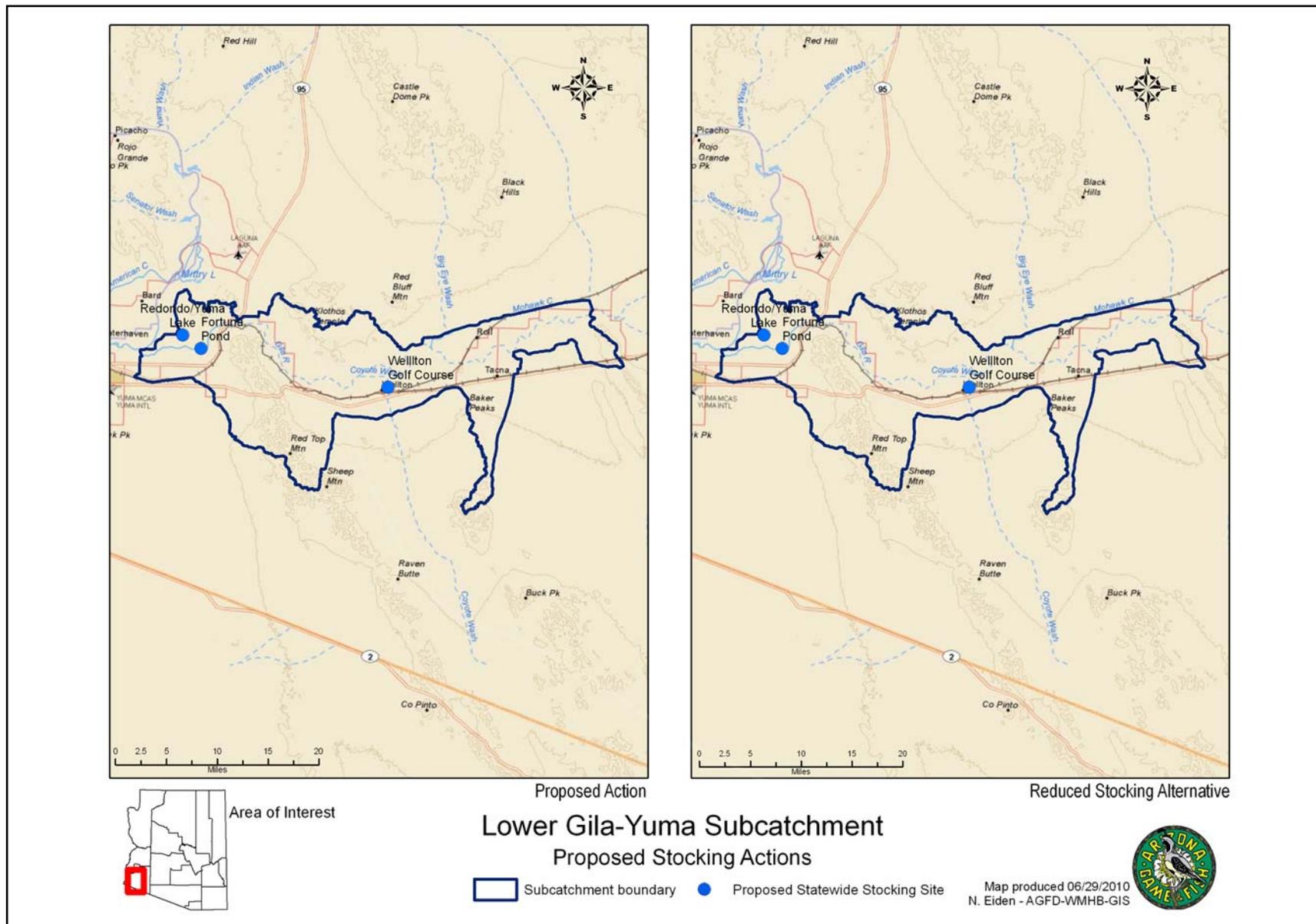
W/09-279/NEPA/EA/FigB6

**Figure B6. Upper Gila River Subcatchment.**

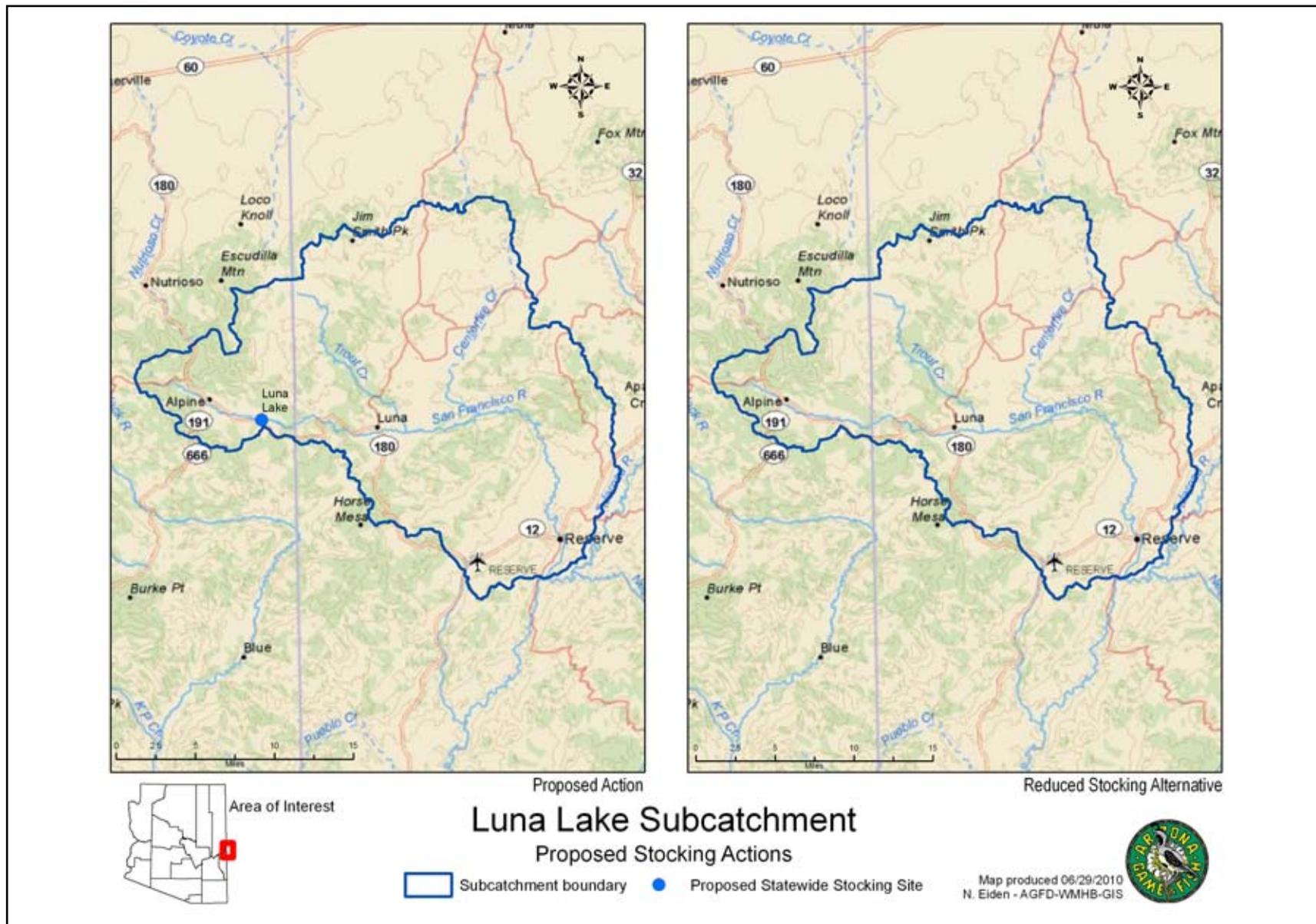


W/09-279/NEPA/EA/FigB7

**Figure B7. Middle Gila River Subcatchment.**

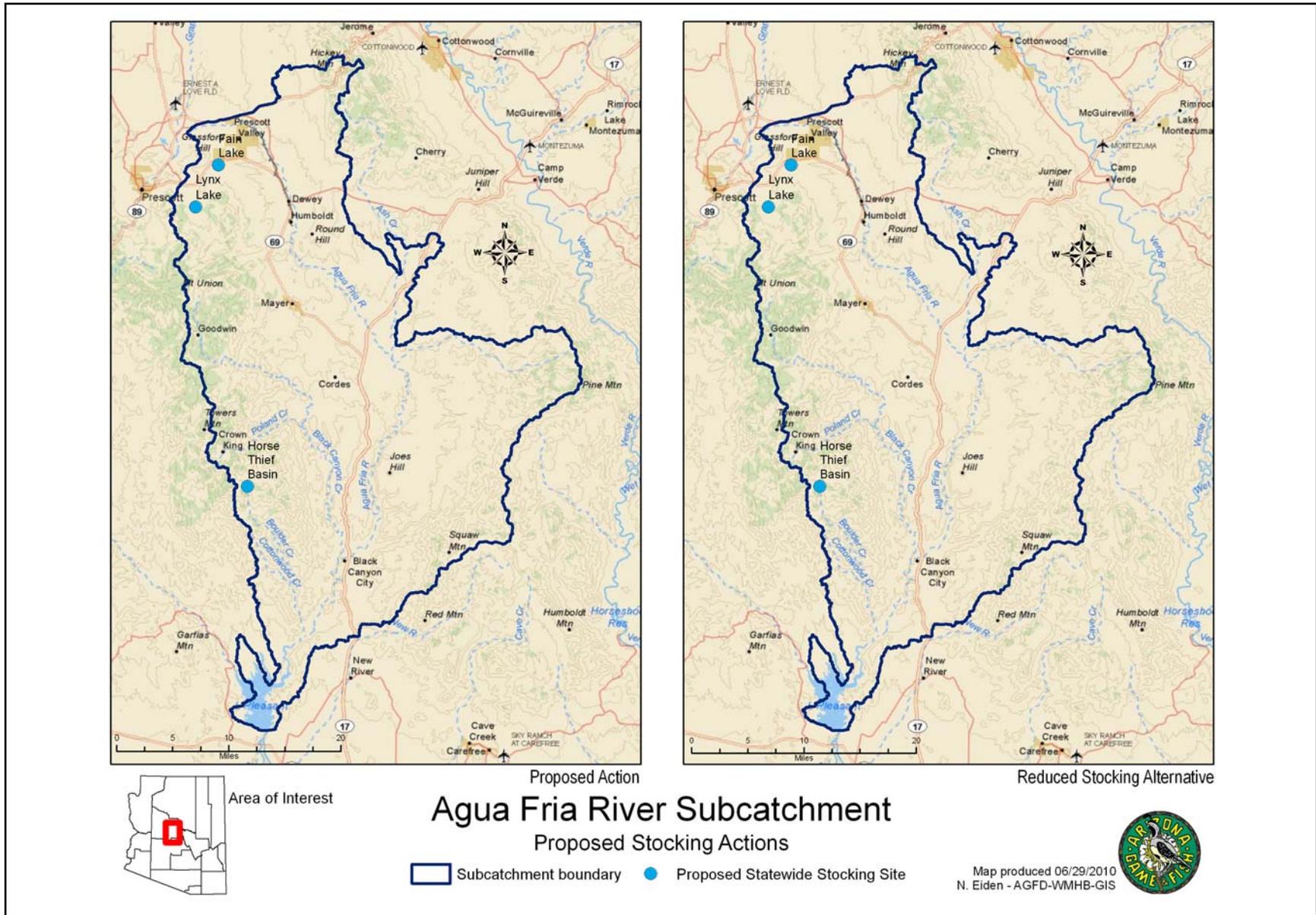


**Figure B8. Lower Gila-Yuma Subcatchment.**



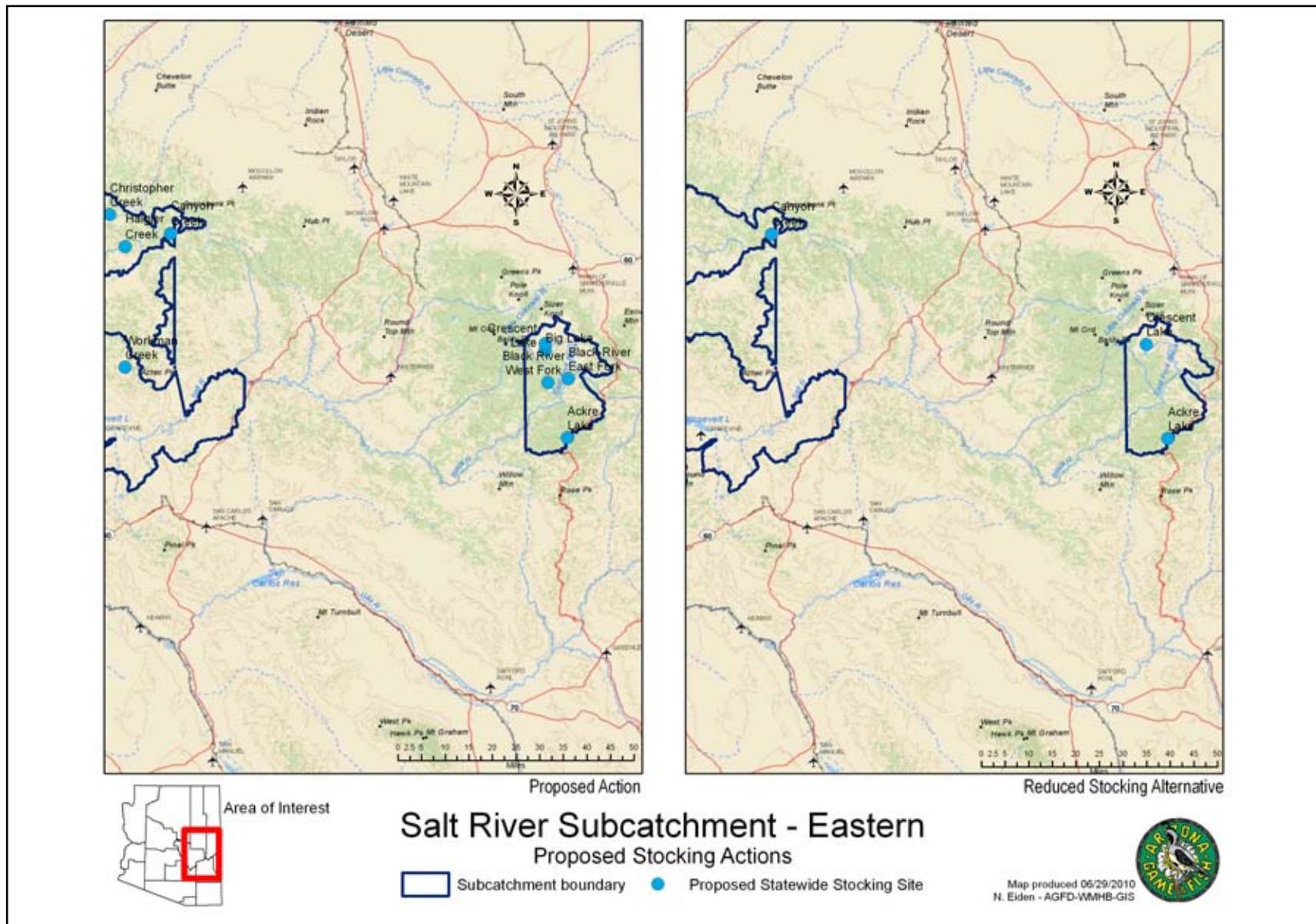
W/09-279/NEPA/EA/FIGB9

Figure B9. Luna Lake Subcatchment.



W/09-279/NEPA/EA/figB10

Figure B10. Agua Fria River Subcatchment.



W/09-279/NEPA/EA/FigB11a

**Figure B11a. Salt River Subcatchment—Eastern.**

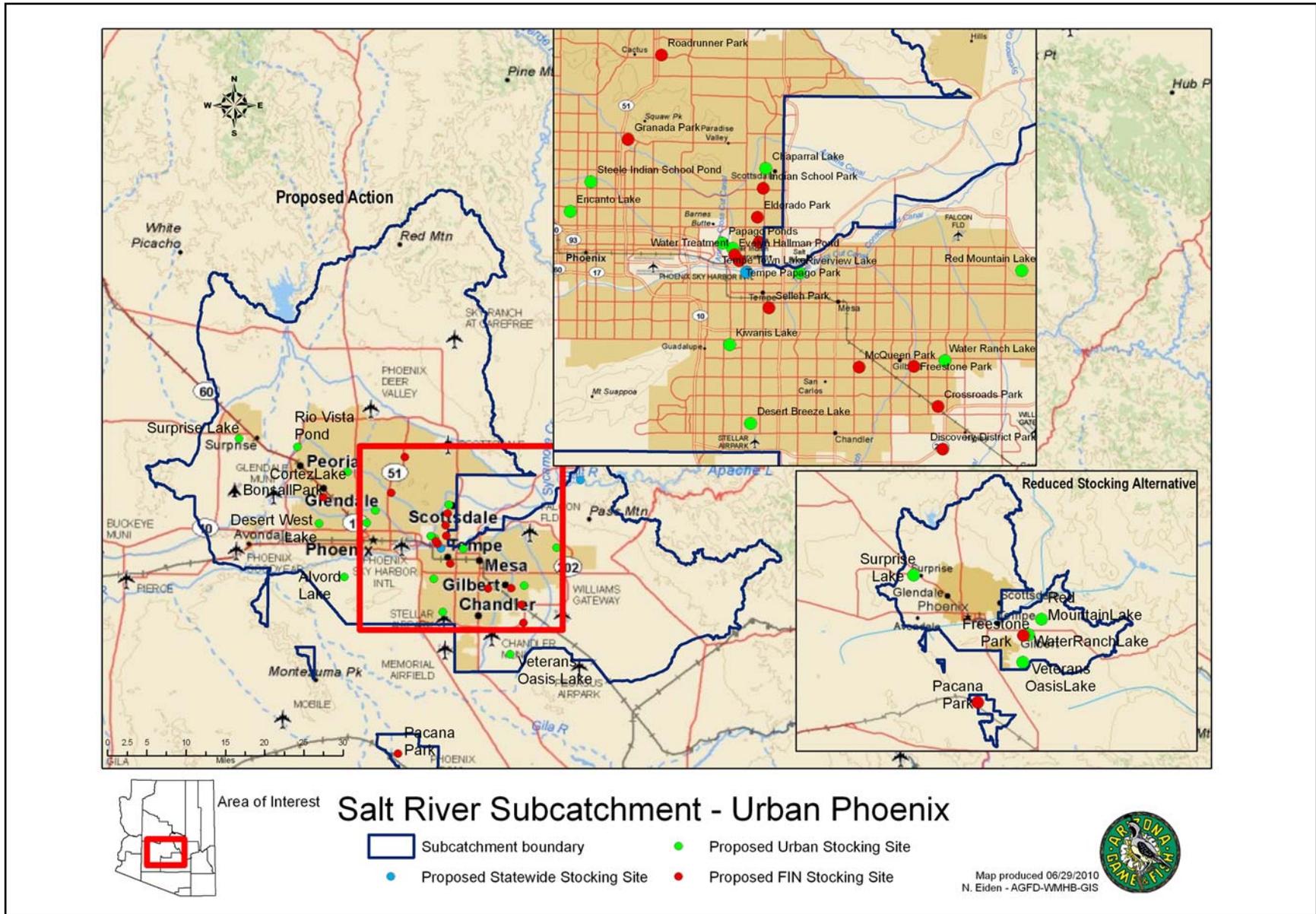


Figure B11b. Salt River Subcatchment—Urban Phoenix.

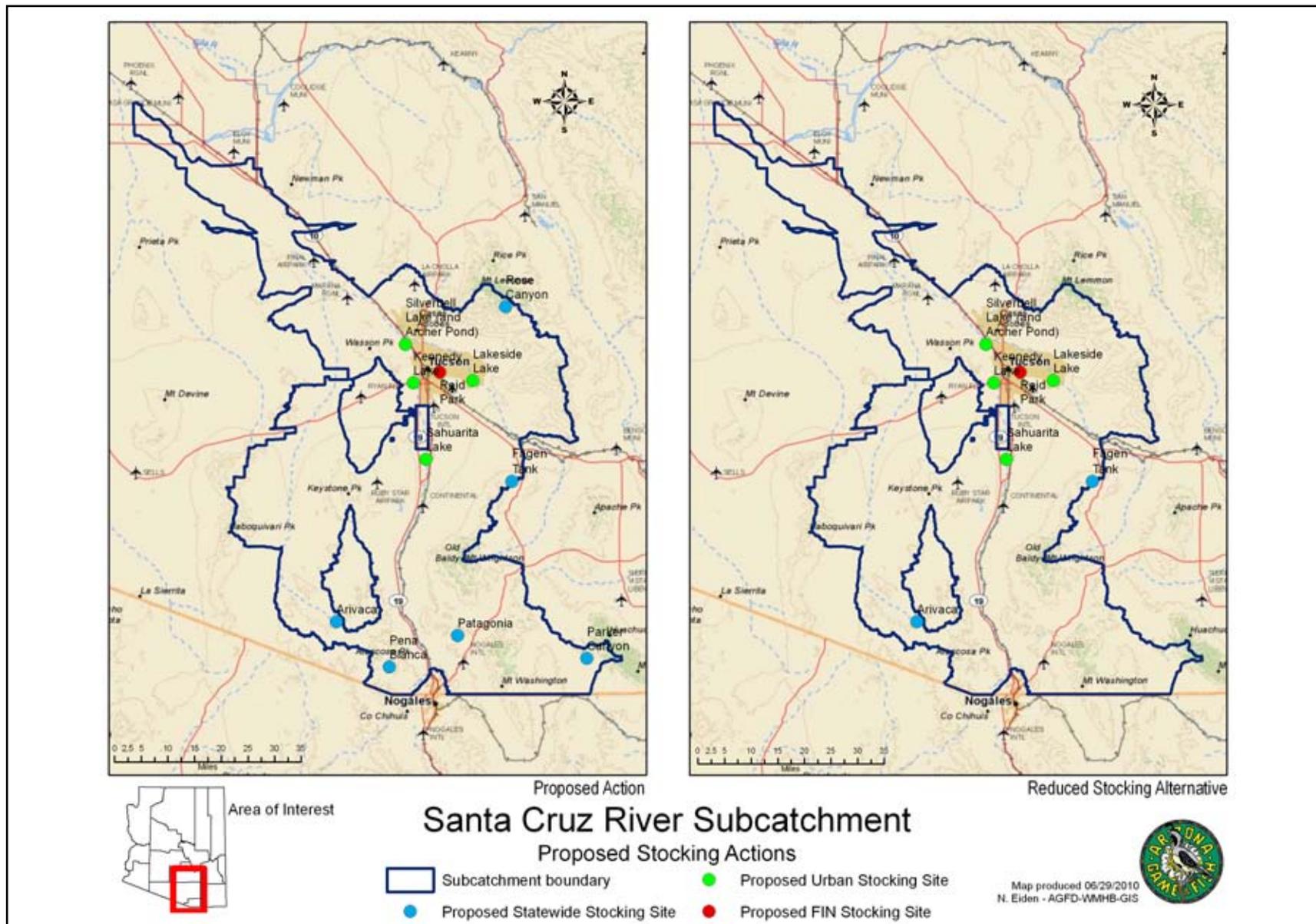


Figure B12. Santa Cruz River Subcatchment.

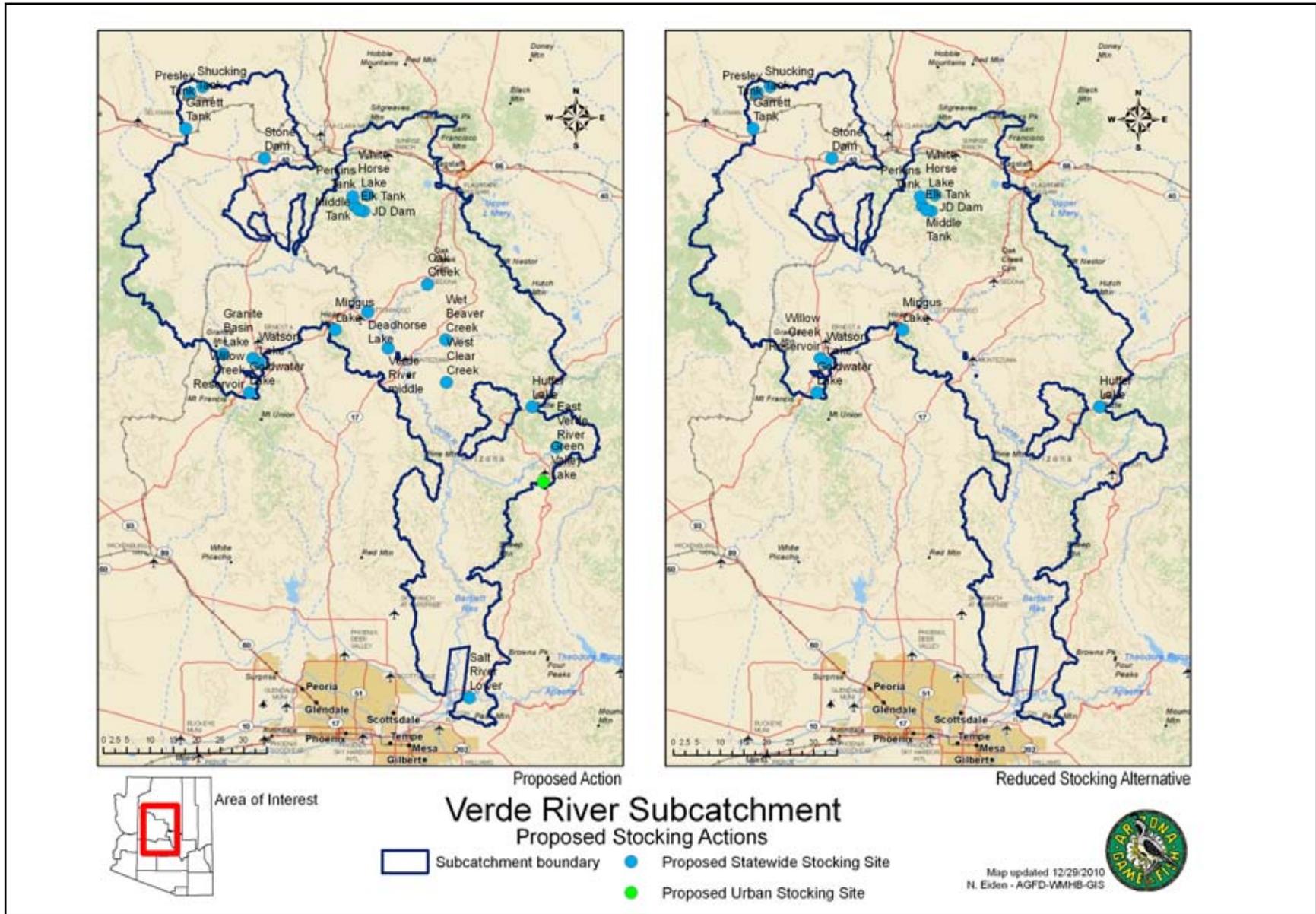


Figure B13. Verde River Subcatchment.



## **APPENDIX C**

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### **Elevation and Vegetative Characteristics of Subcatchment and Stocking Sites**



**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

<b>SUBCATCHMENT/Complex/ Stocking Site</b>	<b>Elevation Above Mean Sea Level (feet)</b>	<b>Vegetation Type (biome)</b>
<b>COLORADO RIVER– HAVASU CREEK</b>	<b>1,870–6,775</b>	<b>Mohave desertscrub, Great Basin desertscrub, Plains and Great Basin grassland, Great Basin conifer woodland, Petran montane conifer forest</b>
<b>Havasu Creek Complex</b>		
Cataract Lake	6,825	Petran montane conifer forest
City Reservoir	6,750	Petran montane conifer forest
Dogtown Reservoir	7,070	Petran montane conifer forest
Russell Tank	7,000	Petran montane conifer forest, Great Basin conifer woodland
Santa Fe Tank	6,850	Petran montane conifer forest
Kaibab Lake	6,795	Petran montane conifer forest
<b>COLORADO RIVER– YUMA NORTH</b>	<b>364–600</b>	<b>Sonoran desertscrub</b>
<b>Yuma Complex</b>		
La Paz County Park Pond	375	Sonoran desertscrub
La Paz County Park Lagoon	375	Sonoran desertscrub
<b>COLORADO RIVER– YUMA SOUTH</b>	<b>100–1,560</b>	<b>Sonoran desertscrub</b>
<b>Yuma Complex</b>		
Yuma West Wetland	130	Sonoran desertscrub
Hidden Shores	160	Sonoran desertscrub
<b>LITTLE COLORADO RIVER</b>	<b>2,623–11,000</b>	<b>Mohave desertscrub, Great Basin desertscrub, Plains and Great Basin grassland, Great Basin conifer woodland, Petran montane conifer forest, Petran subalpine conifer forest, subalpine grassland</b>
<b>Little Colorado River Above Lyman Complex</b>		
Hulsey Lake	8,580	Petran montane conifer forest
Pratt Tank	7,990	Great Basin conifer woodland
Nelson Reservoir	7,412	Plains and Great Basin grassland, Great Basin conifer woodland
Lyman Reservoir	5,978	Plains and Great Basin grassland
Carnero Lake	9,033	Petran montane conifer forest
Becker Lake	6,910	Plains and Great Basin grassland
<b>West Fork Complex</b>		
Mexican Hay Lake	8,890	Petran montane conifer forest
Lee Valley Lake	9,418	Petran subalpine conifer forest
Bunch Reservoir	8,256	Petran montane conifer forest
River Reservoir	8,221	Petran montane conifer forest
Tunnel Reservoir	8,261	Petran montane conifer forest
White Mountain Reservoir	9,164	Subalpine grassland
Little Colorado River Greer	8,221–8,800	Petran montane conifer forest
Little Colorado River Sheep's Crossing	8,900–9,200	Petran subalpine conifer forest
<b>Upper Little Colorado River</b>		
Little Ortega Lake	6,420	Plains and Great Basin grassland
Concho Lake	6,296	Plains and Great Basin grassland

**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

SUBCATCHMENT/Complex/ Stocking Site	Elevation Above Mean Sea Level (feet)	Vegetation Type (biome)
<b>White Mountain Complex</b>		
Sponseller Lake	6,960	Great Basin conifer woodland
Silver Creek	6,100	Plains and Great Basin grassland
Long Lake (Show Low)	6,324	Plains and Great Basin grassland
Whipple	6,324	Plains and Great Basin grassland
Little Mormon Lake	6,343	Plains and Great Basin grassland
<b>Schoen's Complex</b>		
Woodland Lake	6,893	Petran montane conifer forest
Rainbow Lake	6,707	Petran montane conifer forest
Show Low Lake	6,542	Petran montane conifer forest
Fools Hollow Lake	6,256	Plains and Great Basin grassland
Scott Reservoir	6,715	Petran montane conifer forest
Show Low Creek	6,275–6,530	Petran montane conifer forest, Plains and Great Basin grassland
Mountain Meadow Recreation Complex	6,730	Petran montane conifer forest
<b>Chevelon Creek Complex</b>		
Chevelon Canyon Lake	6,366	Petran montane conifer forest
Long Tom Lake	7,500	Petran montane conifer forest
Willow Springs Lake	7,513	Petran montane conifer forest
Woods Canyon Lake	7,505	Petran montane conifer forest
<b>Black Canyon Lake</b>		
Black Canyon Lake	7,060	Petran montane conifer forest
<b>Clear Creek Complex</b>		
Bear Canyon Lake	7,560	Petran montane conifer forest
C.C. Cragin (Blue Ridge Reservoir)	6,600	Petran montane conifer forest
Knoll Lake	7,340	Petran montane conifer forest
<b>Clear Creek Reservoir</b>		
Clear Creek Reservoir	4,870	Great Basin desertscrub
<b>Jack's Canyon Complex</b>		
Soldiers Annex Lake	6,777	Plains and Great Basin grassland
Long Lake (Diablo) Lake	6,760	Plains and Great Basin grassland
Soldiers Lake	6,778	Plains and Great Basin grassland
Tremaine Lake	6,737	Plains and Great Basin grassland
<b>Canyon Diablo Complex</b>		
Mud Tank	7,160	Plains and Great Basin grassland
Kinnikinick Lake	7,042	Plains and Great Basin grassland
Coconino Lake	7,130	Plains and Great Basin grassland
Morton Lake	7,031	Plains and Great Basin grassland, Great Basin conifer woodland
Ashurst Lake	7,110	Plains and Great Basin grassland
Frances Short Pond	6,926	Petran montane conifer forest
<b>Walnut Creek Complex</b>		
Marshall Lake	7,112	Petran montane conifer forest
Mormon Lodge Pond	7,110	Petran montane conifer forest
Upper Lake Mary	6,829	Petran montane conifer forest
Lower Lake Mary	6,787	Petran montane conifer forest

**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

<b>SUBCATCHMENT/Complex/ Stocking Site</b>	<b>Elevation Above Mean Sea Level (feet)</b>	<b>Vegetation Type (biome)</b>
<b>RIGGS FLAT</b>	<b>4,275–10,720</b>	<b>Semidesert grassland, Madrean evergreen woodland, Petran montane conifer forest, Petran subalpine conifer forest</b>
<b>Riggs Flat Lake</b>		
Riggs Flat Lake	8,700	Petran montane conifer forest
<b>UPPER GILA RIVER</b>	<b>2,540–10,758</b>	<b>Semidesert grassland, Sonoran desertscrub, Madrean evergreen woodland, Great Basin conifer woodland, Petran montane conifer forest, Petran subalpine conifer forest</b>
<b>Upper Gila</b>		
Cluff Pond #3	3,000	Semidesert grassland
Dankworth Pond	3,190	Sonoran desertscrub
Frye Mesa Lake	5,000	Semidesert grassland
Graham County Fairgrounds	3,043	Sonoran desertscrub
Roper Lake	3,130	Sonoran desertscrub
<b>MIDDLE GILA RIVER</b>	<b>1,773–7,812</b>	<b>Sonoran desertscrub, semidesert grassland, interior chaparral, Madrean evergreen woodland, Petran montane conifer forest</b>
<b>Kearny</b>		
Kearny	1,860	Sonoran desertscrub
<b>LOWER GILA–YUMA</b>	<b>141–2,722</b>	<b>Sonoran desertscrub</b>
<b>Lower Gila–Yuma Complex</b>		
Fortuna Pond	155	Sonoran desertscrub
Redondo/Yuma Lake	145	Sonoran desertscrub
Wellton Golf Course	250	Sonoran desertscrub
<b>LUNA LAKE</b>	<b>5,663–10,665</b>	<b>Petran montane conifer forest, Petran subalpine conifer forest, subalpine grassland</b>
<b>Luna Lake</b>		
Luna Lake	7,882	Petran montane conifer forest
<b>AGUA FRIA RIVER</b>	<b>1,570–7,800</b>	<b>Sonoran desertscrub, interior chaparral, Petran montane conifer forest, semidesert grassland, Plains and Great Basin grassland, Great Basin conifer woodland</b>
<b>Agua Fria River Complex</b>		
Fain Lake	5,060	Interior chaparral
Horse Thief Basin	6,080	Interior chaparral
Lynx Lake	5,529	Interior chaparral
<b>SALT RIVER</b>	<b>880–10,110</b>	<b>Sonoran desertscrub, interior chaparral, semidesert grassland, Petran montane conifer forest, Madrean evergreen woodland</b>
<b>Black River Complex</b>		
Ackre Lake	8,600	Petran montane conifer forest
Big Lake	8,985	Subalpine grassland
Black River East Fork	7,600–7,890	Petran montane conifer forest
Black River West Fork	7,660–7,760	Petran montane conifer forest
Crescent Lake	9,043	Subalpine grassland
<b>Canyon Creek Complex</b>		
Canyon Creek	6,260–6,720	Petran montane conifer forest
<b>Workman Creek</b>		
Workman Creek	5,260–5,500	Petran montane conifer forest

**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

SUBCATCHMENT/Complex/ Stocking Site	Elevation Above Mean Sea Level (feet)	Vegetation Type (biome)
<b>Tonto Creek Complex</b>		
Tonto Creek	4,960–6,160	Petran montane conifer forest
Christopher Creek	5,520–6,120	Petran montane conifer forest
Haigler	5,200–5,400	Great Basin conifer woodland, Petran montane conifer forest
<b>Lower Salt Complex</b>		
Apache Lake	1,891	Sonoran desertscrub
Canyon Lake	1,610	Sonoran desertscrub
Saguaro Lake	1,506	Sonoran desertscrub
Tempe Town Lake	1,148	Sonoran desertscrub
Salt River Lower	1,313–1,506	Sonoran desertscrub
<b>Phoenix Urban Lakes</b>		
Alvord Lake	1,065	Sonoran desertscrub
Chaparral Lake	1,260	Sonoran desertscrub
Cortez Lake	1,230	Sonoran desertscrub
Desert Breeze Lake	1,175	Sonoran desertscrub
Desert West Lake	1,075	Sonoran desertscrub
Encanto Lake	1,095	Sonoran desertscrub
Evelyn Hallman Pond	1,245	Sonoran desertscrub
Kiwanis Lake	1,190	Sonoran desertscrub
Papago Ponds	1,250	Sonoran desertscrub
Red Mountain Lake	1,505	Sonoran desertscrub
Rio Vista Pond	1,165	Sonoran desertscrub
Riverview Lake	1,200	Sonoran desertscrub
Steele Indian School Pond	1,120	Sonoran desertscrub
Surprise Lake	1,215	Sonoran desertscrub
Veterans Oasis Lake	1,275	Sonoran desertscrub
Water Ranch Lake	1,275	Sonoran desertscrub
<b>Phoenix Special Urban Lakes</b>		
Crossroads Park	1,273	Sonoran desertscrub
Freestone Park	1,245	Sonoran desertscrub
McQueen Park	1,217	Sonoran desertscrub
Bonsall Park	1,137	Sonoran desertscrub
Pacana Park	1,186	Sonoran desertscrub
Granada Park	1,260	Sonoran desertscrub
Roadrunner Park	1,397	Sonoran desertscrub
Eldorado Park	1,210	Sonoran desertscrub
Indian School Park	1,237	Sonoran desertscrub
Vista del Camino Park	1,190	Sonoran desertscrub
Tempe Papago Park	1,170	Sonoran desertscrub
Water Treatment	1,240	Sonoran desertscrub
Discovery District Park	1,285	Sonoran desertscrub
Selleh Park	1,187	Sonoran desertscrub

**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

SUBCATCHMENT/Complex/ Stocking Site	Elevation Above Mean Sea Level (feet)	Vegetation Type (biome)
<b>SANTA CRUZ RIVER</b>	<b>1,100–9,400</b>	<b>Sonoran desertscrub, semidesert grassland, interior chaparral, Madrean evergreen woodland, Petran montane conifer forest, Plains and Great Basin grassland, Chihuahuan desertscrub</b>
<b>Upper Santa Cruz River</b>		
Parker Canyon Lake	5,380	Madrean evergreen woodland
Patagonia Lake	3,765	Semidesert grassland
Peña Blanca Lake	3,832	Madrean evergreen woodland
<b>Middle Santa Cruz</b>		
Rose Canyon Lake	6,933	Madrean evergreen woodland
Fagen Tank	4,200	Semidesert grassland
Arivaca Lake	3,800	Semidesert grassland
<b>Tucson Santa Cruz Complex</b>		
Sahuarita Lake	2,710	Sonoran desertscrub
Kennedy Lake	2,450	Sonoran desertscrub
Lakeside Lake	2,700	Sonoran desertscrub
Silverbell Lake (and Archer Pond)	2,255	Sonoran desertscrub
<b>Tucson Santa Cruz Special Urban Lakes</b>		
Reid Park	2,490	Sonoran desertscrub
<b>VERDE RIVER</b>	<b>1,300–12,633</b>	<b>Sonoran desertscrub, interior chaparral, semidesert grassland, Petran montane conifer forest, Great Basin conifer woodland, Plains and Great Basin grassland, Petran subalpine conifer forest, alpine tundra</b>
<b>Big Chino Wash Complex</b>		
Granite Basin Lake	5,600	Interior chaparral
Garrett Tank	5,800	Great Basin conifer woodland
Stone Dam	5,500	Great Basin conifer woodland
Shucking Tank	6,000	Great Basin conifer woodland
Presley Tank	5,820	Great Basin conifer woodland
<b>Sycamore Complex</b>		
Elk Tank	6,680	Petran montane conifer forest
JD Dam	6,456	Great Basin conifer woodland
White Horse Lake	6,551	Great Basin conifer woodland
Middle Tank	6,500	Great Basin conifer woodland
Perkins Tank	6,800	Great Basin conifer woodland
<b>Middle Verde Complex</b>		
Mingus Lake	7,573	Petran montane conifer forest
Dead Horse Lake	3,300	Semidesert grassland
Verde River Middle	3,060–3,400	Semidesert grassland
Oak Creek	3,400–5,480	Interior chaparral, Great Basin conifer woodland, semidesert grassland
Wet Beaver Creek	3,640–3,900	Great Basin conifer woodland, Sonoran desertscrub
West Clear Creek	3,200–3,680	Great Basin conifer woodland
Huffer Lake	7,440	Petran montane conifer forest
<b>Granite Creek Complex</b>		
Watson Lake	5,161	Great Basin conifer woodland
Goldwater Lake	6,800	Petran montane conifer forest

**Table F. Elevation and vegetative characteristics of subcatchments and stocking sites.**

<b>SUBCATCHMENT/Complex/ Stocking Site</b>	<b>Elevation Above Mean Sea Level (feet)</b>	<b>Vegetation Type (biome)</b>
<b>Granite Creek Complex</b>		
Willow Creek Reservoir	5,136	Great Basin conifer woodland
<b>Lower Verde River Complex</b>		
East Verde River	4,536–5,600	Interior chaparral, Petran montane conifer forest
Green Valley Lake	4,840	Great Basin conifer woodland
<b>BILL WILLIAMS RIVER</b>	<b>1,176–7,263</b>	<b>Sonoran desertscrub, interior chaparral, semidesert grassland, Great Basin conifer woodland, Petran montane conifer forest</b>
<b>Santa Maria Complex</b>		
Granite Mountain #1	3,675	Sonoran desertscrub
Granite Mountain #2	3,800	Interior chaparral
Bass Tank	5,170	Interior chaparral
Blue Tank	4,695	Interior chaparral
<b>Burro Creek Complex</b>		
Carter Tank	6,200	Great Basin conifer woodland
Coor's Lake	3,700	Interior chaparral
Antelope Tank	6,000	Great Basin conifer woodland
Bar 37 Tank	5,820	Great Basin conifer woodland
Harman Tank	5,660	Interior chaparral
Harmon Tank #2	5,930	Great Basin conifer woodland
Little Antelope Tank	5,790	Great Basin conifer woodland
McElhaney Tank	6,000	Petran montane conifer forest
Stubb's Tank	5,660	Interior chaparral
Swale Tank	4,520	Semidesert grassland

## **APPENDIX D**

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### **Consultation and Other Special Status Species Analyzed Further**



**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Native fish	Apache trout	<i>Oncorhynchus apache</i>	S, T, WSCA	Streams above 5,780 feet; Petran montane conifer to subalpine conifer forests
	Bluehead sucker	<i>Catostomus discobolus</i>	S	Streams, rivers; 2,001–6,759 feet; desertscrub to Petran montane conifer forest
	Bonytail chub	<i>Gila elegans</i>	E*, S, WSCA	Mid-sized to large rivers and pools; 235–1,960 feet; desertscrub to interior chaparral
	Colorado pikeminnow	<i>Ptychocheilus lucius</i>	E, S, WSCA	Mid-sized to large rivers with swift waters and cobbles for breeding; 600–3,800 feet; desertscrub to interior chaparral
	Desert pupfish	<i>Cyprinodon macularius</i>	E*, WSCA	Shallow water of desert springs, small streams, and marshes; below 5,000 feet
	Desert sucker	<i>Catostomus clarkii</i>	S, SC	Rapids in streams and rivers; 480–8,840 feet; desertscrub to subalpine conifer forest
	Gila chub	<i>Gila intermedia</i>	E*, S, WSCA	Smaller headwaters, cienegas, springs, or marshes; 2,720–5,420 feet; desertscrub to Petran montane conifer forest
	Gila topminnow	<i>Poeciliopsis occidentalis occidentalis</i>	E, WSCA	Headwaters, springs, and backwaters; 1,320–7,510 feet; desertscrub to Petran montane conifer forest
	Gila trout	<i>Oncorhynchus gilae</i>	T, WSCA	Small mountain headwater streams; 5,446–9,220 feet; Petran montane conifer to subalpine conifer forests
	Headwater chub	<i>Gila nigra</i>	C, S	Mid- to headwaters of mid-sized streams; 4,347–6,562 feet; desertscrub to Petran montane conifer forest
	Humpback chub	<i>Gila cypha</i>	E*, WSCA	High-gradient, canyon-bound rivers; 1,530–4,400 feet; desertscrub to interior chaparral/Great Basin conifer woodland
	Little Colorado spinedace	<i>Lepidomeda vittata</i>	T*, WSCA	Slow to moderate waters with gravelly bottoms; 3,300–9,800 feet; desertscrub to subalpine conifer forest
	Little Colorado sucker	<i>Catostomus</i> sp. 3	S, SC, WSCA	Creeks, small to medium rivers, and impoundments; 2,200–7,100 feet; desertscrub to Petran montane conifer forest
	Loach minnow	<i>Tiaroga cobitis</i>	T*, WSCA	Riffles in mainstream rivers and tributaries; 2,325–8,240 feet; desertscrub to Petran montane conifer forest

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Native fish (continued)	Longfin dace	<i>Agosia chrysogaster chrysogaster</i>	S, SC	Small to medium streams; less than 6,700 feet; desertscrub to Petran montane conifer forest
	Quitobaquito pupfish	<i>Cyprinodon eremus</i>	E*, WSCA	Springs, marshes, slow-flowing streams, and river backwaters; currently restricted to small ponds and springs; in Arizona, only known from Quitobaquito Springs and nearby concrete tank
	Razorback sucker	<i>Xyrauchen texanus</i>	E*, WSCA	Medium to large rivers; 181–5,000 feet; desertscrub to interior chaparral/Great Basin conifer woodland
	Roundtail chub	<i>Gila robusta</i>	C, S, WSCA	Mid-elevation streams and rivers; 1,210–7,220 feet; desertscrub to Petran montane conifer forest
	Sonora chub	<i>Gila ditaenia</i>	T*, WSCA	Perennial and spatially intermittent small to moderately sized streams; approximately 3,900 feet elevation
	Sonora sucker	<i>Catostomus insignis</i>	S, SC	Streams; 1,210–8,730 feet; desertscrub to subalpine conifer forest
	Speckled dace	<i>Rhinichthys osculus</i>	S, SC	Small to medium rivers; 1,550–9,843 feet; desertscrub to subalpine conifer forest
	Spikedace	<i>Meda fulgida</i>	T*, WSCA	Shallow waters less than 3.3 feet; 1,620–4,500 feet; desertscrub to semidesert grasslands/interior chaparral
	Woundfin	<i>Plagopterus argentissimus</i>	E*, WSCA	Shallow, warm, turbid, fast-flowing water; below 4,500 feet in elevation
Amphibians and semi-aquatic reptiles	Chiricahua leopard frog	<i>Rana chiricahuensis</i>	T, WSCA	Ponds, tanks, streams; 3,281–8,890 feet; desertscrub to subalpine conifer forest
	Arizona tree frog (Huachucas/Canelo Hills Distinct Population Segment)	<i>Hyla wrightorum</i>	C	In shrubs or trees near water; 5,000–8,500 feet; Petran montane conifer forests and meadows to subalpine conifer forest
	Lowland leopard frog	<i>Rana yavapaiensis</i>	S, SC, WSCA	Permanent waters, both natural and man-made; 480–6,200 feet; desertscrub to Petran montane conifer forest
	Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>	S, SC, WSCA	Permanently flowing streams with bank-side vegetation; 2,440–8,080 feet; Great Basin conifer woodlands to subalpine conifer forest

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Amphibians and semi-aquatic reptiles (continued)	Northern leopard frog	<i>Rana pipiens</i>	S, WSCA	Permanent waters with rooted aquatic vegetation; 0–11,000 feet; desertscrub to just below alpine tundra
	Northern Mexican garter snake	<i>Thamnophis eques megalops</i>	C, S, WSCA	Vegetated cienegas, streams, and stock tanks; 3,000–5,000 feet; desertscrub to Petran montane conifer forest
	Sonora tiger salamander	<i>Ambystoma mavortium stebbinsi</i>	E, WSCA	Lakes, ponds and cattle tanks; 4,650–6,220 feet; semidesert grasslands
	Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	C	Ponds and streams; 0–6,700 feet; desertscrub to Petran montane conifer forest
	Western narrow-mouthed toad	<i>Gastrophryne olivacea</i>	S, WSCA	In the vicinity of streams, pools, and springs; 1,400–4,700 feet; desertscrub to Petran montane conifer forest
Aquatic invertebrates	Balmorhea saddle-case caddisfly	<i>Protoptila balmorhea</i>	SC	Larger, slower-moving warm streams; 3,500 feet; semidesert grasslands
	California floater	<i>Anodonta californiensis</i>	S, SC	Shallow waters in perennial waters; 4,000–8,670 feet; Petran montane conifer forest
	Page Springs caddisfly	<i>Metrichia nigratta</i>	SC	Streams, springs; unknown elevation and associated plant community
	Page springsnail	<i>Pyrgulopsis morrisoni</i>	C, S	Springs, seeps; 3,300–3,600 feet; plains and desert grassland
	Three Forks springsnail	<i>Pyrgulopsis trivialis</i>	C, S	Springs and spring-fed streams; 8,220–8,459 feet; Petran montane conifer forest
	White Mountains water penny beetle	<i>Psephenus montanus</i>	SC	Cold, fast-flowing streams; 6,720–8,830 feet; Petran montane to subalpine conifer forests
Riparian plants	Alcove bog-orchid	<i>Platanthera zothecina</i>	S, SC	Moist stream banks, seeps, and hanging gardens with constant moisture; 5,000–9,000 feet; desertscrub to Great Basin conifer woodland
	Aravaipa wood fern	<i>Thelypteris puberula</i> var. <i>sonorensis</i>	S	On riverbanks, seepage areas, and meadows; 2,220–4,500 feet; desertscrub
	Arizona alum root	<i>Heuchera glomerulata</i>	S	Shaded rocky cliffs near seeps or streams; 4,000–9,000 feet; interior chaparral to subalpine conifer forest
	Arizona giant sedge	<i>Carex ultra</i>	S	Moist soils near perennial springs and streams; 2,040–6,000 feet; Great Basin conifer woodland

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Riparian plants (continued)	Arizona willow	<i>Salix arizonica</i>	S, HS	High elevation wet meadows, streamsid es, and cienegas; 8,550–10,000 feet; subalpine conifer forest.
	Blumer’s dock	<i>Rumex orthoneurus</i>	HS, S, SC	Mid- to high elevation wetlands adjacent to perennial water; 4,480–9,660 feet; Petran montane meadows
	Boreal bog orchid	<i>Platanthera hyperborea</i>	SR	Rich, moist woods; 7,500–9,500 feet; Petran montane conifer forests
	Chihuahuan sedge	<i>Carex chihuahuensis</i>	S	Wet soils in streambeds; 3,600–7,200 feet; Petran montane conifer forests and subalpine conifer forest
	Crenulate moonwort	<i>Botrychium crenulatum</i>	S, SC	Marshes and springs; 10,000–11,000 feet; Petran montane conifer forests
	Goodding’s onion	<i>Allium gooddingii</i>	S, HS	Moist shaded canyon bottoms in climax conifer forests along perennial, intermittent, and ephemeral streams; 7,000–10,600 feet; Petran montane conifer forest and subalpine conifer forest.
	Lemmon lily	<i>Lilium parryi</i>	S, SC, SR	Shady canyon bottom along perennial streams or springs; 5,500–7,800 feet; Petran montane conifer forests
	Lemmon’s stevia	<i>Stevia lemmonii</i>	S	Rocky canyon slopes, ravines, and streambeds; 3,000–4,580 feet; subalpine conifer forest
	Slender bog orchid	<i>Platanthera purpurascens</i>	SR	Seeps, stream banks, fens, open woodlands; 8,200–10,900 feet; Petran montane conifer forests
	Texas purple spike	<i>Hexalectris warnockii</i>	HS, S, SC	Shady canyon bottoms along streams; 5,000–7,000 feet; subalpine conifer forest
	Thurber’s bog orchid	<i>Platanthera limosa</i>	SR	Marshes, springs, and stream banks; 5,900–8,200 feet; Petran montane conifer forests
	Weeping muhly	<i>Muhlenbergia xerophila</i>	S	Seeps or associated with water; 3,520–6,000 feet; desertscrub to Petran montane conifer forests
	Whisk fern	<i>Psilotum nudum</i>	HS, S	Mesic woods, thickets, swamps, hammocks, rocky slopes; 3,610 feet; Petran montane conifer forests

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Riparian plants (continued)	White mandarin twisted stalk	<i>Streptopus amplexifolius</i>	SR	Moist areas; below 9,190 feet; Petran montane conifer forests
	White Mountain clover	<i>Trifolium neurophyllum</i>	S, SC	Permanently wet meadows, springs, and streamsides; 6,500–9,000 feet; Petran montane conifer forests
	Yellow lady’s-slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	HS, S	Boggy, swampy areas near rivers, canal banks, and meadows; 6,000–9,560 feet; Petran montane conifer forests
Non-piscivorous riparian/aquatic nesting birds	American redstart	<i>Setophaga ruticilla</i>	WSCA	Mature and second growth wooded habitat; 5,190–7,365 feet; Madrean evergreen woodland to Petran montane conifer forests
	Black-bellied whistling-duck	<i>Dendrocygna autumnalis</i>	WSCA	Along rivers, ponds, stock tanks, marshes, and swamps; 985–4,200 feet; desertscrub to interior chaparral
	California black rail	<i>Laterallus jamaicensis coturniculus</i>	S, SC, WSCA	Marshes; 155–475 feet; desertscrub
	Elegant trogon	<i>Trogon elegans</i>	WSCA	Canyons with riparian vegetation; 3,400–6,800 feet; Madrean evergreen woodland to Petran montane conifer forest
	Mexican spotted owl	<i>Strix occidentalis lucida</i>	T*, WSCA	Canyons, steep slopes; 4,500–10,000 feet; Great Basin conifer woodland to subalpine conifer forest
	Northern gray hawk	<i>Buteo nitidus maximus</i>	S, SC, WSCA	Riparian forests with mesquite adjacent; 1,960–4,600 feet; desertscrub to interior chaparral
	Pine grosbeak	<i>Pinicola enucleator</i>	WSCA	Open forests and edges; 7,140–9,400 feet; Petran montane conifer to subalpine conifer forests
	Rose-throated becard	<i>Pachyramphus aglaiae</i>	S, WSCA	Sycamore riparian habitats; 3,550–4,030 feet; Great Basin conifer forests
	Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E*, WSCA	Dense riparian thickets near water; 75–9,180 feet; desertscrub to Petran montane conifer meadows and forests
	Tropical kingbird	<i>Tyrannus melancholicus</i>	WSCA	Lowlands near water, often associated with cottonwoods; 1,070–4,100 feet; desertscrub and semidesert grasslands

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Non-piscivorous riparian/aquatic nesting birds (continued)	Yellow-billed cuckoo	<i>Coccyzus americanus</i>	C, S, WSCA	Streamside riparian groves; 90–6,710 feet; desertscrub to Petran montane conifer forest
	Yuma clapper rail	<i>Rallus longirostris yumanensis</i>	E, WSCA	Freshwater marshes with extensive cattails; 100–1,500 feet; desertscrub
Terrestrial riparian invertebrates	Maricopa tiger beetle	<i>Cicindela oregona maricopa</i>	S	Sandy banks along streamsides; 1,092–6,940 feet; desertscrub to Petran montane conifer forest
Ground-dwelling riparian mammals and reptiles	American water shrew	<i>Sorex palustris</i>	S, WSCA	Boreal and Petran montane riparian habitats; 8,200–9,630 feet; Petran montane conifer forests
	Arizona shrew	<i>Sorex arizonae</i>	S, SC, WSCA	Rocky, narrow canyons usually near surface water; 5,160–8,500 feet; subalpine conifer forest
	Giant spotted whiptail	<i>Aspidoscelis burti stictogrammus</i>	S, SC	Mountain canyons, arroyos, and mesas; 0–4,500 feet; desertscrub to semidesert grasslands
	Mexican wolf	<i>Canis lupus baileyi</i>	E, WSCA	Oak and pine/juniper savannahs in foothills and mixed conifer woodlands above 4,000 feet
	Mount Graham red squirrel	<i>Tamiasciurus hudsonicus grahamensis</i>	E*, WSCA	Higher conifer forests of high humidity and a closed canopy; 7,360–10,235 feet; spruce-fir forests
	New Mexico jumping mouse	<i>Zapus hudsonius luteus</i>	C, S, WSCA	Moist meadows near streams; 6,500–9,430 feet; plains and semidesert grasslands
	Redback whiptail	<i>Aspidoscelis xanthonota</i>	SC	Canyons and hills; 1,070–3,500 feet; desertscrub
Piscivorous riparian/aquatic nesting birds	Bald eagle (Sonoran Desert area and winter populations)	<i>Haliaeetus leucocephalus</i>	S, SC, WSCA	Breeding populations in riparian habitat along streams, rivers, and reservoirs; 460–7,930 feet; desertscrub to Petran montane conifer forests. Winter populations along streams, rivers, and reservoirs and roadsides where adequate prey base exists; unknown elevation range; Petran montane conifer forests
	Belted kingfisher	<i>Megaceryle alcyon</i>	WSCA	Perennial waters; 1,840–8,400 feet; desertscrub to Petran montane conifer forests

**Table G. Consultation and other special status species analyzed further, their status designation, and habitat characteristics.**

Taxonomic Group	Common Name	Scientific Name	Status	Habitat
Piscivorous riparian/aquatic nesting birds (continued)	Common black-hawk	<i>Buteogallus anthracinus</i>	S, WSCA	Mature riparian along perennial waterways; 1,570–7,080 feet; desertscrub to Petran montane conifer forests
	Golden eagle	<i>Aquila chrysaetos</i>	Bald and Golden Eagle Protection Act	Open areas in prairies in hilly or mountainous regions; 4,000–10,000 feet; desertscrub to alpine tundra
	Great egret	<i>Ardea alba</i>	S, WSCA	Waterways and water bodies, agricultural fields and meadows; 100–1,500 feet; desertscrub
	Least bittern	<i>Ixobrychus exilis</i>	S, WSCA	Marshes with tall vegetation; 850–1,500 feet; desertscrub
	Osprey	<i>Pandion haliaetus</i>	S, WSCA	Near waterways and water bodies where adequate prey exists; 800–8,300 feet; desertscrub to Petran montane conifer forests
	Snowy egret	<i>Egretta thula</i>	S, WSCA	Marshes and other water bodies, agricultural fields; 100–1,950 feet; desertscrub

Source: Arizona Game and Fish Department Heritage Data Management System. 2010. Element Status Designations by Taxon, Scientific Name.

[http://www.azgfd.gov/w\\_c/edits/documents/allspecies\\_bytaxon\\_002.pdf](http://www.azgfd.gov/w_c/edits/documents/allspecies_bytaxon_002.pdf). Updated June 7, 2010. Accessed July 21, 2010, and January 31, 2011.

\* = Proposed or Designated Critical Habitat

C = U.S. Department of the Interior Fish and Wildlife Service Candidate

E = U.S. Department of the Interior Fish and Wildlife Service Endangered

HS = Arizona Department of Agriculture Highly Safeguarded

S = U.S. Department of Agriculture Forest Service and/or Bureau of Land Management Sensitive

SC = U.S. Department of the Interior Fish and Wildlife Service Species of Concern

SR = Arizona Department of Agriculture Salvage Restricted

T = U.S. Department of the Interior Fish and Wildlife Service Threatened

WSCA = Wildlife of Special Concern in Arizona



## **APPENDIX E**

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### **Consultation and Other Special Status Species Eliminated from Further Analysis**



**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
American frog orchid	<i>Coeloglossum viride</i> var. <i>virescens</i>	Hannagan Meadow, Greenlee County.	Not near any stocking sites
Arizona cave amphipod	<i>Stygobromus arizonensis</i>	Prefers aquatic habitats in subterranean caves and mine tunnels. Type specimen taken in deep pool at depth of about 3 feet.	Different habitat; not near any stocking sites
Arizona myotis	<i>Myotis occultus</i>	Most records are from the Mogollon Rim from Alpine northwest to near Flagstaff, including Mingus Mountain, Verde Valley, Sierra Ancha Mountains, and the Pinal Mountains. Likely occurs along the lower Colorado River Valley since it is known from at least four localities in the California portion of that area, from the southernmost tip of Nevada south to near Yuma and one unmappable locality in the Mojave Desert of Arizona. There is also a record of 12 specimens collected in 1894 by W. Price from the then-abandoned Fort Lowell near Tucson and a 1992 record from Tucson.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Arizona snaketail	<i>Ophiogomphus arizonicus</i>	They are found in fairly swift rocky mountain streams in pine woodland with silt for larval habitat.	Not near any stocking sites
Arizona water penny beetle	<i>Psephenus arizonensis</i>	Cold, fast-flowing high-elevation streams in the Chiricahua Mountains. This restricted distribution may be caused by poor dispersal ability, which appears to occur only during larval stages.	Not near any stocking sites
Beautiful shiner	<i>Cyprinella formosa</i>	Extirpated from San Bernardino Creek, Cochise County, by 1970. Reintroduced into four ponds on the San Bernardino National Wildlife Refuge in 1990.	Not near any stocking sites
Black-billed magpie	<i>Pica hudsonia</i>	Northeastern portion of state, in Apache County. This includes Teec Nos Pos Wash, Chinle Wash, the vicinity of Many Farms, Walker Creek, and historically south of Puerco River. Open country with scattered trees, brushy habitats, sagebrush communities, riparian.	Range of bird is not in or near any stocking areas
Black-capped gnatcatcher	<i>Polioptila nigriceps</i>	Southeastern Arizona—more specifically Sonoita Creek (Santa Cruz County), Chino Canyon (Pima and Santa Cruz counties), Florida Wash, Sycamore Canyon, and Kino Springs (Santa Cruz County). Riparian woodland and associated brushy areas. Per NatureServe (2001), “Riparian thickets, thorn forest, wooded washes; mesquite/hackberry thickets especially favored in Arizona (Dunn and Garrett 1987). In Arizona, nests have been found in the upper branches of mesquite, Arizona sycamore, and hackberry trees (Groschupf 1992).”	Different habitat; mostly xeric riparian breeder

**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Black Mountain talussnail	<i>Sonorella papagorum</i>	Found deep within the slopes covered with slides of black basalt; only known from Black Mountain, Pima County.	Different habitat; not near any stocking sites
Bleached skimmer	<i>Libellula composita</i>	Southeast Arizona only.	Not near any stocking sites
Blue silverspot butterfly	<i>Speyeria nokomis coerulescens</i>	Spring-fed meadows, moist hillsides, and canyon bottoms; 5,000–6,000 feet; subalpine conifer forest; Catalina Mountains south to Huachuca Mountains in southeastern Arizona; may be extirpated from Arizona.	Not near any stocking sites
Bobolink	<i>Dolichonyx oryzivorus</i>	Eastern Arizona in Gila and Apache counties. Herbaceous wetland, cropland-hedgerow, grassland-herbaceous. In migration and winter, they can be found in rice fields, marshes, and open, woody areas. They breed in open grassland, preferring moist, lush areas.	Casual visitor
Box Canyon muhly	<i>Muhlenbergia dubioides</i>	Grows on steep slopes, ridge tops, limestone rock outcrops, and along draws, at elevations of 1,500–2,300 meters.	Not near any stocking sites
Brown springsnail	<i>Pyrgulopsis sola</i>	Endemic to type locality of Brown Spring, Yavapai County, northwestern Arizona.	Not near any stocking sites
Buff-breasted flycatcher	<i>Empidonax fulvifrons</i>	Preferred breeding habitat is scrub and open woodlands. Rincon Mountains.	Not near any stocking sites
Bylas springsnail	<i>Pyrgulopsis arizonae</i>	Endemic to three springs on the north bank of the Gila River between Bylas and Pima, Graham County, southeastern Arizona.	Not near any stocking sites
California fan palm	<i>Washingtonia filifera</i>	Only in two remote sites in the Kofa Mountains.	Not near any stocking sites
Cameron water-parsley	<i>Cymopterus megacephalus</i>	Endemic to northern Arizona. From eastern Coconino County, north and south of Cameron, and north of Gray Mountain, northeast of Flagstaff. Also collected in Yavapai County near Montezuma Castle. McDougall (1973) reports that the distribution for this plant includes Utah, Colorado, New Mexico, and Arizona. In Yavapai County, collected on Canotia hillsides with limy soil.	Not near any stocking sites
Canyon spotted whiptail	<i>Aspidoscelis burti</i>	Primarily an inhabitant of the Semidesert Grassland and Madrean Evergreen Woodland communities but also follows drainages down into Arizona Upland Sonoran desertscrub and Chihuahuan desertscrub in some areas. Usually encountered along canyons and drainage.	Different habitat; grassland species

**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Cave myotis	<i>Myotis velifer</i>	South of Mogollon Plateau from Lake Mohave, Burro Creek, Montezuma Well, San Carlos Apache Reservation, and the Chiricahua Mountains south to Mexico. Although known from as far southwest as the Harquahala Mountains, Gila Bend, Organ Pipe Cactus National Monument and about 20 miles north of Yuma near the Colorado, it has not been recorded from the extreme southwestern part of the state. Found in small numbers in southeastern Arizona in the winter.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Chiricahua mock pennyroyal	<i>Hedeoma costatum</i>	Huachuca Mountains in Cochise County. Arid calcareous mountain regions of mixed pine and oak woodlands, on open rocky limestone outcrops and cliff faces, and road embankments.	Different habitat; woodland habitats
Chiricahua Mountain brookweed	<i>Samolus vagans</i>	In Arizona, this species is found in the Huachuca Mountains of Cochise County, the Rincon, Santa Catalina, and Santa Rita mountains of Pima County, and the Canelo Hills and Pajarito mountains of Santa Cruz County. The Chiricahua Mountain brookweed is confined to areas with permanent water, such as springs, seeps, and in and along streams at elevations of 1,219 to 2,195 meters (4,000–7,200 feet) (Arizona Game and Fish Department [AGFD] 1999d).	Not near any stocking sites
Chisos coral-root	<i>Hexaletris revoluta</i>	Flowering May to August. Oak-juniper-pinyon pine woodlands in leaf litter and humus, occasionally in rocky, open terrain; of conservation concern; 1,000–1,600 meters; Arizona, Texas, New Mexico. In Arizona, it grows in Cochise and Pima counties; in Texas, in the Guadalupe and Chisos mountains.	Different habitat; woodland habitats
Clark Peak talussnail	<i>Sonorella christenseni</i>	Rockslides on the north slope of Clark Peak, Blue Jay Ridge area, and Ladybug Saddle, Pinaleño Mountains, Graham County, Arizona.	Different habitat; not near any stocking sites
Clark's Grebe	<i>Aechmophorus clarkii</i>	Marshes, lakes and bays; 440–480 feet; desertscrub. Found along the Colorado River year-round in Mohave and La Paz counties; breeds at Topock Marsh and Topock Gorge in Havasu National Wildlife Refuge.	Not near any stocking sites
Crested coral root	<i>Hexaletris spicata</i>	Flowering May to August. In organic mesic to dry soil over limestone or sandstone, in juniper, pine, and oak woodlands.	Different habitat; woodland habitat
Dalhousie spleenwort	<i>Asplenium dalhousiae</i>	Moist, rocky ravines, terrestrial among and at bases of rocks; 1,300–2,000 meters; Arizona, New Mexico. In the flora, it is found only in the Mule, Huachuca, and Baboquivari mountains of southern Arizona. The pattern of disjunction in the worldwide range of this species is highly unusual.	Different habitat; not near any stocking sites

**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Desert springsnail	<i>Pyrgulopsis deserta</i>	Unidentified springs in the Littlefield area, Mohave County.	Not near any stocking sites
Eastwood alum root	<i>Heuchera eastwoodiae</i>	Rocky slopes and cliffs.	Different habitat
Flagstaff pennyroyal	<i>Hedeoma diffusum</i>	San Francisco Plateau of the Colorado Plateau Province; Flagstaff and southward in Coconino and Yavapai counties, including the rims of Oak Creek and Sycamore canyons. Rock pavement, cliff, limestone, and sandstone break habitats in the Ponderosa pine vegetation type. Canopy coverage ranges from 0 to 86 percent. The plant prefers open spots with weathered limestone solution pockets filled with 4 to 6 inches of soil but also grows in vertical cracks and around the edges of boulders.	Different habitat
Flannelmouth sucker	<i>Catostomus latipinnis</i>	Large and moderately large rivers; 1,540–3,160 feet; desertscrub to Great Basin conifer woodland.	Not near any stocking sites
Fossil springsnail	<i>Pyrgulopsis simplex</i>	Spring near Strawberry, Gila County, along with Fossil Springs, Yavapai County. This species occupies springheads and shallow, muddy spring runs or seeps (not usable by fish)	Different habitat; not near any stocking sites
Fringed myotis	<i>Myotis thysanodes</i>	Throughout much of state, although not known from northeast or southwest corner. Their winter range in Arizona shifts to the southernmost counties and Mohave County.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Fulvous whistling-duck	<i>Dendrocygna bicolor</i>	Formerly this duck occurred irregularly within the Sonoran Desert, especially along the Colorado River, where it probably nested. Now decidedly rare, this species has become sporadic in occurrence eastward to Phoenix and Picacho Lake, most observations still being along the Colorado River south of Cibola (Brown 1985).	Rare in Arizona
Gila tryonia	<i>Tryonia gilae</i>	Unnamed spring north of Bylas, Graham County.	Not near any stocking sites
Grand Wash springsnail	<i>Pyrgulopsis bacchus</i>	Grapevine Springs, Whisky Springs, and Tassi Springs within the Grand Wash trough, Mohave County, northwestern Arizona.	Not near any stocking sites
Huachuca springsnail	<i>Pyrgulopsis thompsoni</i>	Springs in southern Santa Cruz and Cochise counties, Arizona, and northern Sonora, Mexico.	Not near any stocking sites
Huachuca water umbel	<i>Lilaeopsis schaffneriana</i> var. <i>recurva</i>	Cienegas or marshy wetlands at 2,000 to 6,000 feet elevation, within Sonoran desertscrub, grassland or oak woodland, and conifer forest. Plants found in unshaded or shaded sites in shallow water, saturated soil near seeps, springs and streams; Cochise and Santa Cruz counties.	If concern, would be covered in Biological Assessment; not near any stocking sites

**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Hualapai milkwort	<i>Polygala rusbyi</i>	Central and west-central Arizona, in Yavapai and Mohave counties. Desert grassland and juniper woodland. Elevation: 3,150–5,000 feet (960–1,524 meters).	Different habitat
Kaibab bladderpod	<i>Lesquerella kaibabensis</i>	Kaibab Plateau, Coconino County, Arizona. Along Arizona 67 from Telephone Hill south to 1 mile south of Kaibab Lodge. Also, Dry Park, Marble Viewpoint, and Dog Canyon southeast of Dog Point. On limestone-clay knolls with a high percentage of exposed rock on the surface, within open windswept meadows (pseudo-alpine fellfield). Meadows of the Kaibab Plateau probably functioned as Pleistocene refugia for this and other endemic species (Phillips 1999).	Different habitat
Kingman springsnail	<i>Pyrgulopsis conica</i>	Burns, Dripping, and Cool Springs in the Black Mountains near Kingman, Mohave County, northwestern Arizona.	Not near any stocking sites
Lemmon cloak fern	<i>Notholaena lemmonii</i>	Sporulating summer to fall. Rocky slopes and cliffs, usually on granitic or volcanic substrates; 1000–1500 meters.	Different habitat
Long-legged myotis	<i>Myotis volans</i>	In forested mountains in Apache, Cochise, Coconino, Gila, Mohave, and Yavapai counties. Absent from desert and desert mountains of southwestern part of the state.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Lowland burrowing treefrog	<i>Pternohyla fodiens</i>	San Simon Wash between Sells and Ajo, north to near Hickiwan, Pima County. Also reported from Vekol Valley, Maricopa County. Though tropical in origin, in Arizona this species is most often associated with xeric environments, where it lives in burrows in low open mesquite grasslands, usually associated with major washes and arroyos that help form the large mesquite bosques it seems to prefer.	Different habitat; mesquite grasslands
Madrean ladies'-tresses	<i>Spiranthes delitescens</i>	Flowering July to August. Cienegas, wet riparian meadows, stream banks; of conservation concern; 1,400–1,500 meters.	Not near any stocking sites
Maricopa tiger beetle	<i>Cicindela oregona maricopa</i>	Sandy banks along streamsides; 1,092–6,940 feet; desertscrub to Petran montane conifer forest	Not near any stocking sites
Masked bobwhite	<i>Colinus virginianus ridgwayi</i>	Extirpated before or soon after 1900 because of overgrazing and a series of droughts. Northern edge of range extended to bottomlands of Altar and Santa Cruz valleys. Habitat restoration efforts and reintroductions were halted in the late 1970s and early 1980s.	Different habitat; grasslands

**Table H. Consultation and other special status species eliminated from further analysis.\***

Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Mazatzal triteleia	<i>Triteleia lemmoniae</i>	Flowering spring to summer (late May to August). Yellow pine belts, mountains; 1,000–3,000 meters; Arizona.	Different habitat
Mexican stoneroller	<i>Campostoma ornatum</i>	Currently known only from Rucker Canyon in the Chiricahua Mountains and San Bernardino Creek (AGFD 2003, AGFD 1996). Shallow riffles and runs over gravel/cobble substrates. Large adults can be found in pools over sand or gravelly bottoms in small streams; they are also often in flowing segments of pools or along undercut banks or other cover.	Not near any stocking sites
Mississippi kite	<i>Ictinia mississippiensis</i>	San Pedro River and Gila River near Kearney, Verde River near Cottonwood, and below Bartlett Lake (Glinski and Gennaro 1988). According to the Heritage Data Management System (HDMS) (AGFD, unpublished records), it has been located in Cochise, Maricopa, and Pinal counties, and one general sighting for Yavapai County in the vicinity of Camp Verde. Tall forest, open woodland, prairie, semiarid rangeland, shelterbelts, wooded areas bordering lakes and streams in more open regions, scrubby oaks and mesquite, and lowland/floodplain forests. Requires open areas near nesting sites for foraging. Breeding habitat in Arizona consists of riparian deciduous forests that border desertscrub upland habitats. Man-made habitat in central Arizona consists of pecan orchards (Glinski and Gennaro 1988).	No known nesting areas near stocking locations
Mock-pennyroyal	<i>Hedeoma dentatum</i>	Chiricahua, Huachuca, Mule, Whetstone, and Winchester Mountains (Cochise County); Pinaleño Mountains (Graham County); Baboquivari, Rincon and Santa Catalina Mountains (Pima County); Atascosa, Mustang, Pajarito, and Santa Rita Mountains (Santa Cruz County).	Different habitat
Mogollon columbine	<i>Aquilegia desertorum</i>	Flowering spring to fall (May to October). Open rocky places; 2,000–2,500 meters; Arizona.	Different habitat
Mojave giant skipper	<i>Agathymus alliae</i>	Northwestern Arizona, desert, woodland-conifer. Pine woodland canyons and desert with <i>Agave utahensis</i> .	Different habitat
Montezuma well springsnail	<i>Pyrgulopsis montezumensis</i>	Endemic to Montezuma Well, Yavapai County. Habitat is high carbon dioxide-laden habitat that is unsuitable for fish.	Different habitat; not near any stocking locations

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Navajo bladderpod	<i>Lesquerella navajoensis</i>	In Arizona, from the Red Valley area (north of Navajo, New Mexico) to Wheatfields Lake, Apache County. Possibly in the Chuska and Carrizo mountains, Apache County. Typically occurs on windward, windswept mesa rims and nearby habitat with little vegetative cover and high insolation. Typically only found on the nearly white Todilto Limestone Member of the Morrison Formation overlaying Entrada Sandstone or Chinle outcrops (Roth 2001).	Different habitat
Navajo Mexican vole	<i>Microtus mexicanus navaho</i>	Navajo Mountain (Navajo County) and Defiance Plateau (Apache County), and more recently from the south rim of the Grand Canyon, and the Flagstaff and Williams area (Coconino County). Occupies prostrate thickets of a variety of shrubs that provide dense cover, in areas of high litter and bare ground. Also dry, grassy areas, usually adjacent to ponderosa pine forests, but sometimes as low as juniper woodland or stands of sagebrush, or as high as spruce-fir (Kime 1994).	Different habitat; grass habitats; not near any stocking sites
Navajo sedge	<i>Carex specuicola</i>	Fruiting June to September. In crevices on rock faces with seeps, small “hanging gardens” of conservation concern; 1,100–2,000 meters; Arizona.	Different habitat
Neumogen’s giant skipper	<i>Agathymus neumogeni</i>	Desert, shrubland/chaparral, shrub-grassland or open woodland-conifer, woodland or mixed. Dry mountains with food plants (NatureServe).	Different habitat
Niobrara ambersnail	<i>Oxyloma haydeni haydeni</i>	In Arizona, one population occurs on the South Rim of the Grand Canyon at Indian Gardens and a second population is found at riverside marsh at about river mile 9 in the Lee’s Ferry reach. Niobrara ambersnail is terrestrial.	Different habitat; not near any stocking sites
Northern buff-breasted flycatcher	<i>Empidonax fulvifrons pygmaeus</i>	Summer resident in southeastern Arizona, breeding only in Huachuca, Santa Catalina, and Chiricahua mountains (Glinski 1988). Open stands of pine (especially ponderosa and Chihuahua) or sycamore with bare, weedy, or grassy under story areas (Glinski 1988); riparian vegetation; does not tolerate dense vegetation.	No known nesting areas near stocking locations
Organ Pipe shovel-nosed snake	<i>Chionactis palarostris organica</i>	In Arizona, occupies paloverde-saguaro habitats; sandy-gravelly soils; prefers bajadas and hilly terrain. Only known along Sonoita-Ajo road in Organ Pipe Cactus National Monument and the surrounding area, from the U.S.–Mexico border to 23 miles north.	Not near any stocking sites, different habitat; desert habitats
Parker’s cyloepus riffle beetle	<i>Cyloepus parkeri</i>	Permanent, slow streams; 2,850–4,000 feet; desertscrub to Great Basin conifer woodland. Only known habitat in Roundtree Canyon and Tangle Creek in Bloody Basin, Yavapai County.	Not near any stocking sites

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Pinaleño talussnail	<i>Sonorella grahamensis</i>	Rockslides within the Pinaleño Mountains, Graham County.	Not near any stocking sites
Plains leopard frog	<i>Lithobates blairi</i>	Isolated population in southeastern Arizona; western side of Chiricahua Mountains (Turkey Creek, etc.) and adjoining Sulphur Springs Valley. Found mainly around streams, ponds, creek pools, reservoirs, marshes, or irrigation ditches in prairie and desert grasslands, but also can be found in oak and oak-pine woodland and farmland. Can range into terrestrial habitat near water during wet weather. Often bask on vegetation mats at water's edge.	Not near any stocking sites
Plummer onion	<i>Allium plummerae</i>	Chiricahua and Huachuca Mountains, and Leslie Canyon in Cochise County, and Baboquivari Mountains in Pima County.	Different habitat; grassland species; not found near any stocking locations
Pocketed free-tailed bat	<i>Nyctinomops femorosaccus</i>	Pima, Gila, Mohave, Maricopa, La Paz, Pinal, Graham, Cochise, and Yuma counties.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Poling's giant skipper	<i>Agathymus polingi</i>	In Arizona, presently known from Maricopa, Pinal, and Graham counties southward into Sonora, Mexico (Brock and Prchal 2001). County records include Cochise, Graham, Pima, Pinal, and Santa Cruz (Bailowitz and Brock 1991). Open, rocky flats and slopes near stands of the host (Brock and Prchal 2001).	Different habitat
Porsild's starwort	<i>Stellaria porsildii</i>	Chiricahua Mountains.	Not near any stocking sites
Quitobaquito tryonia	<i>Tryonia quitobaquitae</i>	Spring complex within Organ Pipe Cactus National Monument, Pima County.	Isolated; not near any stocking sites
Relict leopard frog	<i>Lithobates onca</i>	Extreme northwest corner of the state in the Virgin River drainage near Littlefield, Mohave County. According to the U.S. Department of the Interior Fish and Wildlife Service (FWS) (2002), "Adult frogs inhabit permanent streams, springs, and spring-fed wetlands below approximately 600 meters (1,968 feet). Adults may prefer relatively open shorelines where dense vegetation does not dominate. Breeding habitat includes pools or slow-moving side areas of streams, with or without emergent vegetation." They typically are found in or near water, or among <i>Scirpus</i> .	Not near any stocking sites

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Sabino Canyon damselfly	<i>Argia sabino</i>	Occurs primarily in Sabino Canyon. A single male was collected at Molino Basin Forest Camp, and a single female was collected 4.6 miles north of Molino Basin. This area is a small canyon with pines and may represent the highest elevation in the Santa Catalina Mountains that the species occurs (AGFD 2001). In Sabino Creek, the range has constricted over the past 35 years, previously occurring in Lower and Upper Sabino Creek but now restricted to the latter area. Populations of <i>Argia</i> spp. closely correlated with water flow, increasing in wet years and decreasing in dry years, or as stream volume changes due to groundwater conditions.	Not near any stocking sites
San Xavier talussnail	<i>Sonorella eremita</i>	Talus slide on northwest aspect of San Xavier Hill, Pima County.	Not near any stocking sites
Southwestern river otter	<i>Lontra canadensis sonora</i>	Occasional non-confirmed sightings along the Colorado River below Lake Mead. Historically occurred in the Colorado and Gila rivers and their major tributaries, but current distribution uncertain, likely extirpated in most of Arizona.	Not near any stocking sites
Spotted bat	<i>Euderma maculatum</i>	Specimens from near Yuma, Roll, Maricopa Junction, Tempe and Littlefield. Recently recorded from the Kaibab Plateau; also two captured at a watershed southeast of Seligman. Appears to be a substantial population in Fort Pierce Wash area on the Utah–Arizona border, with two individuals netted nearby in Arizona. Two individuals captured at a known roost near Marble Canyon. Aural record exists for eastern Arizona.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Spot-winged meadowhawk	<i>Sympetrum signiferum</i>	Cochise and Santa Cruz counties, including Leslie Canyon, and the west side of the Huachuca Mountains just above 6,000 feet down to the headwaters of the Santa Cruz River at roughly 4,700 feet.	Not near any stocking sites
Sprague’s pipit	<i>Anthus spragueii</i>	Winters mainly in San Rafael, Sonoita, and Sulphur Springs grasslands in southeastern Arizona. A few individuals have also been found wintering in grassy (sometimes mixed with alfalfa) fields along lower Colorado River from north of Yuma to Parker, and grass and alfalfa fields near Phoenix and Sierra Vista.	Different habitat; grasslands only
Squaw Park talussnail	<i>Sonorella allynsmithi</i>	These are generally terrestrial species.	Different habitat; not near any stocking sites
Stephan’s heterelmis riffle beetle	<i>Heterelmis stephani</i>	Bog, Kent, and Sylvester Springs, all in Madera Canyon, in the Santa Rita Mountains, Pima and Santa Cruz counties.	Not near any stocking sites

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Striate disc	<i>Discus shimekii</i>	Carr Canyon in the Huachuca Mountains, Cochise County; Agassiz Peak on San Francisco Mountain, and Navajo Mountain, Coconino County.	Not near any stocking sites
Sweet cicely	<i>Osmorhiza brachypoda</i>	Sierra Ancha and Mazatzal mountains in Gila County.	Not near any stocking sites
Tarahumara frog	<i>Lithobates tarahumarae</i>	Before its extirpation from the state in the early 1980s, <i>Rana tarahumarae</i> was found in three drainages in the Santa Rita Mountains and three drainages in the Pajarito-Atascosa-Tumacacori mountains complex in Santa Cruz County. From June to October 2004, an experimental population of 56 adults, 229 juveniles, and 327 larval frogs was reestablished into one of three historic canyons in the Santa Rita Mountains; source of frogs from northern Sonora, Mexico. Additional sites, including a drainage in the Pajarito Mountains, are being considered for additional reestablishments (FWS 2005).	Not near any stocking sites
Tiger beetle	<i>Cicindela hirticollis corpuscula</i>	Tiger beetles occur more often on lighter, drier soils. This species prefers sandy areas such as sand dunes, sand pits, and sand “blowouts,” often away from water. Adult beetles burrow in the soil to pass the night and escape unfavorable weather, either hot and dry or cold and wet.	Different habitat
Tucson shovel-nosed snake	<i>Chionactis occipitalis klauberi</i>	South-central Arizona, in Pima and Pinal counties. They can be found in arid deserts with sandy washes, dunes, and rocky hillsides. They prefer areas with scattered mesquite-creosote bush.	Not near any stocking sites
Ursine giant skipper	<i>Megathymus ursus</i>	Known from Pinal (Santa Catalina Mountains), Pima, Santa Cruz, and Cochise counties. It is recorded in the following mountain ranges: Santa Catalina, Santa Rita, Whetstone, Huachuca, Dragoon, Pozo Verde, Atascosa, Patagonia, and Chiricahua (Brock and Prchal 2001). Mostly oak woodland but also desert regions with stands of the host between 1,200 and 2,200 meters. Most common at the lower edge of the oak belt.	Different habitat
Verde Rim springsnail	<i>Pyrgulopsis glandulosa</i>	Nelson Place Spring complex, consisting of two springs, separated by 150 meters, that form the headwaters of Sycamore Creek, Yavapai County, central Arizona.	Not near any stocking sites
Virgin spinedace	<i>Lepidomeda mollispinis mollispinis</i>	In Mohave County, found lower Beaver Dam Wash to its confluence with the Virgin River at Littlefield, Arizona.	Not near any stocking sites

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
Western barking frog	<i>Eleutherodactylus augusti cactorum</i>	Cochise and extreme southern Pima and Santa Cruz counties, including Quinlan, Santa Rita, Patagonia, Huachuca, and Pajarito mountains. Unconfirmed report (Wright and Wright 1949) from Sierra Ancha in Gila County, but probably a misidentification. In Arizona, Western barking frogs are found on limestone, rhyolite, granite, and perhaps other rock outcrops on the hillsides of canyons within Madrean evergreen woodlands and woodland-grassland ecotones.	Different habitat
Western fairy slipper	<i>Calypso bulbosa</i>	North Rim of the Grand Canyon and the San Francisco Peaks, Coconino County; White Mountains, Apache and Greenlee counties. In Arizona, it can be found in the cool understory of moist mixed conifer and subalpine forests with ponderosa pine, aspen, or spruce-fir, bogs, and along streams, in rich organic soil.	Not near any stocking sites
Western red bat	<i>Lasiurus blossevillii</i>	Thirty records (as of 2001) scattered throughout the state, except in desert areas. Summer resident only.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Western small-footed myotis	<i>Myotis ciliolabrum</i>	Coconino, Pinal, Mohave, and Cochise Counties. In winter, found in central Mohave County and south of the Gila River in southeastern Arizona.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	Breeds irregularly when conditions are appropriate. Breeding sites are limited to several man-made and alkali ponds near Willcox in Cochise County and the ephemeral Painted Rock Reservoir in Maricopa County. Winters casually along the lower Colorado and Gila rivers and as far north as Phoenix and Prescott. Migrates throughout the state. The species inhabits beaches, lagoons, and salt-evaporation ponds on coasts and barren sparsely vegetated salt flats and braided river channels inland. Coastal beaches and shores of salt ponds and alkaline lakes. In Arizona, snowy plovers may occasionally nest along temporary lakes on sandy playas.	No nesting areas near stocking sites
Wet Canyon talussnail	<i>Sonorella macrophallus</i>	Talus slopes, Pinaleno Mountains, Graham County.	Not near any stocking sites

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Common Name	Scientific Name	Range and Habitat	Rationale for Elimination
White-bellied long-tailed vole	<i>Microtus longicaudus leucophaeus</i>	Pinaleño Mountains, Graham County, Arizona.	Not near any stocking sites
White-faced ibis	<i>Plegadis chihi</i>	Breeding not confirmed in state. Winters along the lower Colorado River in La Paz and Yuma counties in the southwestern part of Arizona. They may use other parts of the state during migration. Primarily freshwater marshes, swamps, ponds, and rivers, especially cattail and bulrush marshes. Nests in marshes, in low trees, on the ground (bulrushes or reeds), or on a floating mat. Will use flooded hay meadows, agricultural fields, and estuarine wetlands.	No known nesting areas near stocking sites
Woodland spurge	<i>Euphorbia macropus</i>	Huachuca Mountains, Cochise County, and the south end of Patagonia Mountains, Santa Cruz County. Shady canyon bottoms in leaf litter, and open hillsides in pine-oak woodland.	Not near any stocking sites
Yaqui catfish	<i>Ictalurus pricei</i>	Rio Yaqui on the northern-most portion of the San Bernardino National Wildlife Refuge (introduced population).	Not near any stocking sites
Yaqui chub	<i>Gila purpurea</i>	Nearly extirpated in the United States, persisting only in one artesian well in San Bernardino Creek drainage; introduced and established in Leslie Creek, Swisshelm Mountains, Arizona.	Not near any stocking sites
Yaqui longfin dace	<i>Agosia chrysogaster</i> sp. 1	Cochise County in the Yaqui River on San Bernardino National Wildlife Refuge (NWR), Leslie Creek NWR, and the Willcox Playa and its tributaries, including West Turkey Creek and Rucker Canyon.	Not near any stocking sites
Yaqui sucker	<i>Catostomus bernardini</i>	Formerly, only in San Bernardino Creek, Cochise County. Disappeared sometime after 1967.	Not near any stocking sites and thought to be extirpated
Yaqui topminnow	<i>Poeciliopsis occidentalis sonoriensis</i>	Limited to the portion of the Rio Yaqui basin in the San Bernardino Wildlife Refuge, Arizona.	Not near stocking sites
Yuma myotis	<i>Myotis yumanensis</i>	Throughout most of state but not found in northeastern corner nor southeastern part of state. Particularly found in the Gila, Graham, La Paz, Maricopa, Mohave, Pinal, and Yuma counties. Probably absent in higher, boreal areas. Winters in the Lower Colorado River area.	No measureable effects anticipated; competition with native aquatic or semi-aquatic species for invertebrate prey has not been documented

\*Table H was compiled based on species-specific evaluations completed by AGFD experts and supplemented as needed by information from HDMS abstracts.

## SUPPLEMENTAL INFORMATION SOURCES

### **Arizona myotis:**

AGFD. 2003. *Myotis occultus*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Black-capped gnatcatcher:**

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### **Black Mountain talussnail:**

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### **Blue silverspot butterfly:**

AGFD. 2001. *Speyeria nokomis coerulescens*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Brown springsnail:**

AGFD. 2003. *Pyrgulopsis sola*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Bylas springsnail:**

AGFD. 2003. *Pyrgulopsis arizonae*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Cameron water-parsley:**

McDougall, W.B. 1973. Seed Plants of Northern Arizona. The Museum of Northern Arizona, Flagstaff, Arizona. p. 345.

### **Cave myotis:**

AGFD. 2002. *Myotis velifer*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Chiricahua Mountain brookweed:**

AGFD. 1999. *Samolus vagans*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

### **Clark's Grebe:**

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### **Clark Peak talussnail:**

AGFD. 2003. *Sonorella christensis*. Unpublished abstract compiled and edited by the AGFD HDMS, Phoenix, Arizona.

**Desert springsnail:**

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## **APPENDIX F**

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### **Analysis Methods for Other Special Status Fish, Amphibians, and Aquatic Invertebrates**



## **Fish Analysis Methods**

This section describes methods used to analyze potential effects that could result from implementation of the alternatives to special status fish species that were not addressed in the Biological Overview. Each stocking location was analyzed to determine if exposure (occurrence of special status species and stocked fish in the same water body) was reasonably possible. If it was, the likelihood of exposure and the potential biological impacts if exposure were to occur were analyzed to determine the magnitude of effects (no effect, low, moderate, or high) for each stocking location and each special status fish species. The number of sites with each determination was compiled by subcatchment and alternative for each special status species.

The majority of the species occurrence information for the analysis was obtained through spatial analysis (Geographic Information Systems [GIS]) of the Lower Colorado Basin Aquatic GAP and the Arizona Game and Fish Department's (AGFD) Heritage Data Management System (HDMS) and Native Fishes databases. The Biological Assessment provided additional species occurrence, hydrological connectivity, habitat, survey, and other details (U.S. Department of the Interior Fish and Wildlife Service [FWS] 2011). Additional fish species occurrences and monitoring results were used where available. The species occurrence records used were limited to those from 1986 to the present.

### Exposure Potential (whether or not exposure was possible)

For potential exposure to exist, there must be a potential for stocked fish and special status fish species to come into contact. Potential exposure was determined to exist unless either of the following conditions was met:

- Stocking location is a closed system and special status fish species do not currently occupy the stocking location.
- Stocking location is an open system but special status species do not occupy the subcatchment.<sup>1</sup>

If potential exposure does not exist for any given site, then the stocking action at the site was concluded to have no effect to special status species.

### Likelihood of Exposure

If exposure was determined possible, the likelihood of actual exposure was analyzed by examining the following factors:

- Whether or not special status fish species are known from the stocking location.
- Nature of hydrological connection between the stocking location and the areas occupied by special status fish species as it relates to fish movement potential.
- Presence and nature of physical barriers that would limit or preclude fish movement.
- Management strategies that would limit or preclude fish movement.

<sup>1</sup> Subcatchments represent the main downstream corridor from the stocking locations to a major water body containing a suite of nonnative predators. It is possible that some stocked fish could move out of the subcatchment in some locations but this would be highly unlikely and if it were to occur would be in low numbers.

- Habitat conditions between the stocking site and special status fish species–occupied areas that would limit or preclude fish movement or survival.

### Potential Biological Impacts

If exposure was determined possible, the potential biological impacts were analyzed by examining the following factors:

- The presence or absence of previously established population(s) of stocked species.
- Predatory nature of stocked species (Table A).
- Special status fish species’ abundance despite past stocking and/or existing population(s) of stocked species.
- Ability of stocked species to survive and reproduce in areas occupied by special status fish species based on stocked species’ biology, habitat conditions, and available survey data.

**Table A. Stocked species’ relative predatory nature on fish based on the fish interactions section of the Biological Assessment (FWS 2011).**

Less Predacious	More Predacious
Apache trout	Walleye
Arctic grayling	Brown trout
Bluegill	Largemouth bass
Brook trout	White crappie
Cutthroat trout	Black crappie
Gila trout	Yellow perch
Redear sunfish	Smallmouth bass
Rainbow trout	Channel catfish

Fish species in the “Less Predacious” column generally consume less fish and pose less of a predation threat to native fish species than the fish species in the “More Predacious” column. White amur and threadfin shad are also proposed for stocking, but these species are herbivorous and planktivorous, respectively (do not consume vertebrate prey), and are therefore not listed in this table.

### Analysis Outcomes

Potential for exposure, likelihood of exposure, and potential biological impacts were used to categorize each stocking location into one of four possible effects outcome categories:

- High—Stocking locations that were predicted to have exposure that was highly probable and potential biological impacts to special status species were substantial. Actions at these stocking sites could result in long-term population declines of special status species in either a localized area or within the subcatchment.
- Moderate—Stocking locations that were predicted either to have exposure that was more limited in probability or to have exposure that was highly probable but was coupled with less substantial potential biological impacts to special status species. Actions at these sites could impact individuals of special status species or even cause temporary and/or localized population declines but would not likely result in long-term population declines. Presence of multiple stocking sites in the same watershed that had “Moderate” outcomes could have more

substantial impacts and result in long-term population declines of special status species in either a localized area or at a subcatchment level.

- Low—Stocking locations that were predicted either to have exposure that was very limited in probability or to have probable exposure but in conjunction with potential biological impacts to special status species that were not substantial. Actions at these sites could impact individuals of special status species but would not likely result in population declines of special status species.
- No effects—Stocking locations that were predicted to have no potential exposure or an extremely low probability of exposure. Actions at these sites would not impact individuals or populations of special status species.

Competition is a potential effect that is acknowledged as occurring but was not specifically addressed in this analysis except implicitly at a few sites. All of the stocked species with the exception of threadfin shad have some potential to affect special status fish species through competition. However, the predatory effects generally outweigh the competition effects (i.e., results in direct mortality) and therefore were the focus of the site analysis. However, when stocking only less predacious species, the competition effects can be important in cases when special status fish species are exposed to high numbers of stocked fish. Interspecific competition effects can include decreased fecundity and recruitment, displacement from preferred/suitable habitat, and physical harm due to harassment or defense of territories, among other effects, but these effects typically require longer exposure time at higher numbers of stocked fish before effects are realized at the individual or population levels. A detailed discussion of species-specific competition can be found in the Biological Assessment (FWS 2011). In the cases where only less predacious species are proposed for stocking, competition effects were considered.

The nature of interactions between stocked species and special status fish species is complex, can be affected by site-specific factors, and is an area in need of further research. Many of the uncertainties that exist are complicated and not easily answered by research, and the potential impacts from stocked species to special status fish species are hard to tease apart and consequently may never be fully understood. Site-specific factors that influence these interactions (e.g., habitat complexity, existing species assemblages, and availability of limiting resources) are not always known, seldom can be adequately measured, and are highly dynamic over time in response to seasonal or annual variation. In cases where adequate information was not available to determine the potential biological impacts, we chose the higher effects (more conservative to the special status fish species) outcome to describe the effects. For example, at several reservoir stocking locations in the Little Colorado River drainage, where the stocking action includes stocking only rainbow trout and/or grayling, bluehead and/or Little Colorado River suckers are present in apparent low numbers. It is not known if these sucker species in absence of the stocking action could establish or be present in higher numbers. These are riverine species and it is very possible that the presence of these species is due to immigration from upstream areas, but breeding populations apparently are established at a few reservoirs. In these cases, the outcome was “moderate” effect rather than a “low” effect, which reflects the more conservative approach in the absence of adequate information.

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## Lowland Leopard Frog Analysis Methods

This section describes methods used to analyze potential effects to lowland leopard frog that could result from implementation of the alternatives. Each stocking location was analyzed to determine if exposure (occurrence of lowland leopard frog and stocked fish in the same water body) was reasonably possible. If it was, the likelihood of exposure and the potential biological impacts to lowland leopard frog if exposure were to occur were then analyzed to determine the magnitude of effects (no effect, low, moderate, or high) for each stocking location. The number of sites with each determination was compiled by subcatchment and alternative. The results of this analysis are summarized in Section 4.1.4 of the Environmental Assessment (EA).

Information on lowland leopard frog occurrences was obtained through spatial analysis (GIS) of the AGFD HDMS and Riparian Herpetofauna databases, which provide the best readily available information on the current known locations for lowland leopard frogs. Information on the distribution of nonnative fish across Arizona was obtained through spatial analysis (GIS) of the Lower Colorado River Basin Aquatic GAP and AGFD's Native Fishes databases. The Biological Assessment provided additional species occurrence, hydrological connectivity, habitat, survey, and other details when available (FWS 2011). The species occurrences records used were limited to those from 1986 to the present.

### Exposure Potential (whether or not exposure was possible)

For potential exposure to exist, there must be potential for stocked fish and frogs to come into contact. Potential exposure was determined to exist if any of the following conditions were met:

- Lowland leopard frogs are documented at the stocking site.
- Lowland leopard frogs are found within 1 mile overland, 3 miles along an ephemeral or intermittent stream channel, or 5 miles along a perennial waterway.<sup>2</sup>
- The stocking location is an open system and lowland leopard frogs are known from the subcatchment.

If potential exposure does not exist for any given site, then the stocking action at the site was concluded to have no effect to lowland leopard frog.

### Likelihood of Exposure

If exposure was determined possible, the likelihood of actual exposure was analyzed by examining the following factors:

- Whether lowland leopard frogs are known from the stocking location.
- Proximity of frogs to the stocking location with respect to the 1-, 3-, or 5-mile criterion.
- Nature of hydrological connection between the stocking location and the areas occupied by lowland leopard frog as it relates to fish and frog movement.
- Presence and nature of physical barriers that would limit or preclude fish movement.

<sup>2</sup> Specific movement and dispersal abilities of the lowland leopard frog are not known. Therefore, this movement criterion was adopted from movement and dispersal potential of the closely related Chiricahua leopard frog described in the Chiricahua Leopard Frog Recovery Plan (FWS 2007).

- Management strategies that would limit or preclude fish movement.
- Habitat conditions between the stocking site and lowland leopard frog–occupied areas that would limit or preclude fish movement or survival.

### Potential Biological Impacts

If exposure was determined possible, the potential biological impacts were analyzed by examining the following factors:

- The presence or absence of previously established populations of stocked species.
- Ability of the stocked species to survive and reproduce in areas occupied by lowland leopard frogs based on the biology of the stocked species, habitat conditions, and survey data.
- Existence of populations of nonnative predators already established at the stocking location and in the vicinity of lowland leopard frog–occupied areas.
- Potential overlap of stocked species and larval lowland leopard frogs.
- Habitat complexity of lowland leopard frog–occupied areas.

### Analysis Outcomes

Potential for exposure, likelihood of exposure, and potential biological impacts were used to categorize each stocking location in one of four possible effects outcome categories:

- High—Stocking locations that were predicted to have exposure that was highly probable and potential biological impacts to special status species were substantial. Actions at these stocking sites could result in long-term population declines of lowland leopard frog in either a localized area or at a watershed level.
- Moderate—Stocking locations that were predicted either to have exposure that was more limited in probability or to have exposure that was highly probable but was coupled with less substantial potential biological impacts to lowland leopard frogs. Actions at these sites could impact individuals of special status species or even cause temporary and/or localized population declines but would not likely result in long-term population declines at a watershed level. Presence of multiple stocking sites in the same watershed that had “Moderate” outcomes could have more substantial impacts and result in long-term population declines of lowland leopard frog in either a localized area or at a watershed level.
- Low—Stocking locations that were predicted either to have exposure that was very limited in probability or to have probable exposure but in conjunction with potential biological impacts to lowland leopard frog that were not substantial. Actions at these sites could impact individuals but would not likely result in population declines of lowland leopard frog.
- No effects—Stocking locations that were predicted to have no potential exposure or an extremely low probability of exposure. Actions at these sites would not impact individuals or populations of lowland leopard frog.

The nature of interactions between stocked species and lowland leopard frog are not fully understood, can be site-specific, and is an area in need of further research. However, many of the uncertainties that exist are complicated, not easily answered by research, and the potential

impacts from stocked species to lowland leopard frog may never be fully understood. In addition, site specific factors that influence these interactions (e.g., habitat complexity) are not always known, seldom can be adequately measured, and are highly dynamic over time in response to seasonal or annual variation. In cases where adequate information was not available to determine the potential biological impacts, we chose the higher effects (more conservative to the lowland leopard frog) outcome to describe the effects.

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## Western Narrow-mouthed Toad Analysis Methods

This section describes methods used to analyze potential effects to the Western narrow-mouthed toad that could result from implementation of the alternatives. The results of this analysis are summarized in Section 4.1.4 of the EA.

The Western narrow-mouthed toad is heavily reliant on shallow, ephemeral waters for reproduction, such as temporary pools, ditches, stock tanks, and playa lakes (Bragg 1940, Anderson et al. 1999, Dayton and Fitzgerald 2001), which in many cases would not be connected to stream systems and not accessible to stocked fish. In cases where the breeding habitat is connected to a stream channel that stocked sport fish could access or if the Western narrow-mouthed toad was present at or able to move to the stocking location, exposure to stocked sport fish could occur. The nature of interactions between nonnative sport fish and the Western narrow-mouthed toad is not known, but it is assumed that nonnative sport fish would prey upon Western narrow-mouthed toad if they came into contact with each other. Although the Western narrow-mouthed toad might use perennial waters, such as the stocking locations, for breeding, the importance of perennial habitats and the degree to which perennial waters contribute to adult recruitment is not known. In addition, ephemeral waters provide an environment with reduced natural predators, such as predatory insects (Dayton and Fitzgerald 2001), which would be present in perennial waters. Therefore, in this EA, we analyzed exposure potential of Western narrow-mouthed toad to stocked fish. However, we acknowledge that this exposure and resulting effects to Western narrow-mouthed toad may not be biologically meaningful to the overall Arizona population of the species due to the species' reliance on ephemeral waterways and the limited ability of stocked fish to reach many of these types of waterways.

Of the stocking subcatchments, the Western narrow-mouthed toad is only found within the Santa Cruz subcatchment, and the nature of exposure at all Santa Cruz stocking locations was examined using the following factors:

- Overland distance between stocking location and areas occupied by the Western narrow-mouthed toad (specific dispersal capabilities of Western narrow-mouthed toad are not known, but Dodd (1996) found that closely related Eastern narrow-mouthed toad (*Gastrophryne carolinensis*) in Florida had a maximum dispersal of 914 meters from its homerange; however, those habitats are far more mesic)
- Nature of hydrological connection between the stocking location and the areas occupied by the Western narrow-mouthed toad
- Presence and nature of physical barriers that would limit or preclude stocked fish movement
- Habitat conditions between the stocking site and western narrow-mouthed toad occupied areas that would limit or preclude fish movement or survival

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## **Invertebrate Analysis Methods**

This section describes methods used to analyze potential effects to special status invertebrate species not addressed in the Biological Overview that could result from implementation of the alternatives. The results of this analysis are summarized in Section 4.1.4 of the EA.

The nature of interactions between nonnative sport fish and special status invertebrate species is largely unknown due to the limited scientific studies of these invertebrate species and the difficulty in conducting research on these small and cryptic species that are often found in only low abundance.

The nature of interactions between nonnative sport fish and the California floater (a clam) are not well understood. Predation by sport fish on California floater has not been documented and was not identified as a threat by the AGFD (2001); however, it is possible that stocked sport fish prey on juvenile California floater. Bequaert and Miller (1973) and Hovingh (2004) suggest that stocked sport fish have impacted the California floater by displacing native fish species that may be needed for its reproduction. This clam, as most clams, has a parasitic larval stage (glochidia) that must attach to a fish, metamorphose, and drop off to complete its life cycle (AGFD 2001). It is not known whether the California floater does indeed need specific native fish host or if nonnative fish species can also be used. Some eastern North American clam species, such as *Lampsilis cardium* and *Utterbackia imbecillis*, have been shown to use a variety of host fish species for reproduction (Watters and O'Dee 1998), while others such as *Alasmidonta atropurpurea* appear to be more limited in their use of host species (Gordon and Layzer 1993).

The nature of interactions between stocked fish species and the three special status insect species (White Mountain water penny beetle, Balmorhea saddle-cased caddisfly, and Page Spring caddisfly) are not well understood. AGFD (2003a, 2003b) identified habitat degradation including water quality as the main threat to the White Mountain water penny beetle and the Balmorhea saddle-cased caddisfly, and did not identify nonnative fish as a threat to these species. Raisanen (1991) identified habitat disturbance as a threat to the Page Spring caddisfly but did not identify nonnative fish as a threat to this species, although fish were identified as a predator of this insect species. Though the limited publications on these three insect species do not identify nonnative fish as a threat, stocked fish species could prey upon these three insect species if they came into contact with each other. It is possible that stocked sport fish could put some additive predation pressure to that of the established native and nonnative fish species.

Due to the poorly understood nature of effects of stocked sport fish on the special status invertebrate species, only the exposure potential of special status invertebrate species to stocked fish was analyzed. It was assumed that if exposure were to happen, there would be some unknown level of negative effect. Each stocking location was analyzed to determine if exposure (occurrence of special status species and stocked sport fish in the same water body) was reasonably possible. If it was, the likelihood of exposure at each site was then analyzed.

The majority of the species occurrence information for the analysis was obtained through spatial analysis (GIS) of the AGFD's HDMS and Native Fishes databases and the Lower Colorado Basin Aquatic GAP. The Biological Assessment provided additional species occurrence, hydrological connectivity, habitat, survey, and other details where available (FWS 2011).

Additional fish species occurrences and monitoring results were used where available. The species occurrence records used were limited to those from 1986 to the present.

#### Exposure Potential (whether or not exposure was possible)

For potential exposure to exist, there must be a potential for stocked fish and special status invertebrate species to come into contact. Potential exposure was determined to exist unless either of the following conditions was met:

- Stocking location is a closed system and special status invertebrate species do not currently occupy the stocking location.
- Stocking location is an open system but special status invertebrate species do not occupy the subcatchment.

If potential exposure does not exist for any given site, then the stocking action at the site would have no effect to special status species.

#### Likelihood of Exposure

If exposure was determined possible, the likelihood of actual exposure was analyzed by examining the following factors:

- Whether or not special status invertebrate species are known from the stocking location.
- Nature of hydrological connection and distance between the stocking location and the areas occupied by special status invertebrate species as it relates to fish movement potential.
- Presence and nature of physical barriers that would limit or preclude stocked fish movement.
- Management strategies that would limit or preclude stocked fish movement.
- Habitat conditions between the stocking site and special status invertebrate species-occupied areas that would limit or preclude fish movement or survival.

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## **APPENDIX G**

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### **Recorded Occurrence by Species of Other Special Status Riparian Plants**



**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number				
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper	
<b>COLORADO RIVER– HAVASU CREEK</b>																						–
<b>Havasu Creek Complex</b>																						
Cataract Lake																						–
City Reservoir																						–
Dogtown Reservoir																						–
Russell Tank																						–
Santa Fe Tank																						–
Kaibab Lake																						–
<b>COLORADO RIVER– YUMA NORTH</b>																						–
<b>Yuma Complex</b>																						
La Paz County Park Pond																						–
La Paz County Park Lagoon																						–
<b>COLORADO RIVER– YUMA SOUTH</b>																						–
<b>Yuma Complex</b>																						
Yuma West Wetland																						–
Hidden Shores																						–

<sup>1</sup> Occurrences are based on Arizona Game and Fish Department Heritage Data Management System records within 5 miles of individual stocking sites and within subcatchment boundaries. Subcatchments are defined as the U.S. Geological Survey Hydrologic Unit Code (HUC) 10 subwatersheds that surround individual stocking sites and the HUC 12–level subwatersheds downstream of those stocking sites to the confluence of a major water body that supports nonnative aquatic species. Because they encompass larger areas, occurrence records in subcatchments are not necessarily reflected at one or more of the associated stocking sites.

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number			
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>LITTLE COLORADO RIVER</b>						X	X	X	X	X			X					X	X	X	<b>9</b>
<b>Little Colorado River Above Lyman Complex</b>																					
Hulsey Lake						X			X			X									3
Pratt Tank																					-
Nelson Reservoir																					-
Lyman Reservoir																					-
Carnero Lake						X															1
Becker Lake																					-
<b>West Fork Little Colorado River</b>																					
Mexican Hay Lake						X			X			X									3
Lee Valley Lake					X	X	X	X	X			X					X	X	X		9
Bunch Reservoir					X	X			X			X								X	5
River Reservoir						X			X			X								X	4
Tunnel Reservoir					X	X			X			X								X	5
White Mountain Reservoir					X	X	X		X			X					X			X	7
Little Colorado River Greer					X	X	X		X			X								X	6
Little Colorado River Sheep's Crossing					X	X	X	X	X			X					X			X	8
<b>Upper Little Colorado River</b>																					
Little Ortega																					-
Concho Lake																					-
<b>White Mountain Complex</b>																					
Sponseller																					-
Silver Creek																					-
Long Lake (Show Low)																					-
Whipple																					-
Little Mormon Lake																					-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																Total Number				
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly		Whisk fern	White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>Schoen's Complex</b>																					
Woodland Lake																					-
Rainbow Lake																					-
Show Low Lake																					-
Fool Hollow Lake																					-
Scott's Reservoir																					-
Show Low Creek																					-
Mountain Meadows Recreation Complex																					-
<b>Chevelon Creek Complex</b>																					
Chevelon Canyon Lake																					-
Long Tom							X														1
Willow Springs							X														1
Woods Canyon							X														1
<b>Black Canyon Lake</b>																					
Black Canyon Lake																					-
<b>Clear Creek Complex</b>																					
Bear Canyon Lake							X														1
C.C. Cragin (Blue Ridge Reservoir)							X														1
Knoll Lake							X														1
<b>Clear Creek Reservoir</b>																					
Clear Creek Reservoir																					-
<b>Jack's Canyon Complex</b>																					
Soldiers Annex																					-
Long Lake (Diablo)																					-
Soldiers																					-
Tremaine Lake																					-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number			
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>Canyon Diablo Complex</b>																					-
Mud Tank																					-
Kinnikinick Lake																					-
Coconino Lake																					-
Morton																					-
Ashurst Lake																					-
Francis Short Pond																					-
<b>Walnut Creek Complex</b>																					-
Marshall Lake																					-
Mormon Lodge Pond																					-
Upper Lake Mary																					-
Lower Lake Mary																					-
<b>RIGGS FLAT</b>							X						X								2
<b>Riggs Flat Lake</b>																					-
Riggs Flat Lake							X						X								2
<b>UPPER GILA RIVER</b>	X			X			X	X					X								5
<b>Upper Gila</b>																					-
Cluff Pond #3				X																	1
Dankworth Pond	X			X																	2
Frye Mesa Lake	X			X				X													3
Graham County Fair Grounds																					-
Roper Lake																					-
<b>MIDDLE GILA RIVER</b>			X																		1
<b>Kearny</b>																					-
Kearny																					-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number			
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>LOWER GILA-YUMA</b>																					-
<b>Lower Gila-Yuma Complex</b>																					
Fortuna Pond																					-
Redondo/Yuma Lake																					-
Wellton Golf Course																					-
<b>LUNA LAKE</b>							X			X									X		3
<b>Luna Lake</b>																					
Luna Lake							X												X		2
<b>AGUA FRIA RIVER</b>																					-
<b>Agua Fria River Complex</b>																					
Fain Lake																					-
Horse Thief Basin																					-
Lynx Lake																					-
<b>SALT RIVER</b>	X					X	X	X		X			X						X	X	8
<b>Black River Complex</b>																					
Ackre Lake							X	X		X			X							X	5
Big Lake						X	X			X									X	X	5
Black River East Fork							X			X									X		3
Black River West Fork							X			X									X		3
Crescent Lake						X	X			X			X						X	X	6
<b>Canyon Creek Complex</b>																					
Canyon Creek							X														1
<b>Workman Creek</b>																					
Workman Creek	X						X														2
<b>Tonto Creek Complex</b>																					
Tonto Creek							X														1
Christopher Creek							X														1
Haigler Creek							X														1

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number		
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lenmon lily	Lenmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover
<b>Lower Salt Complex</b>																				
Apache Lake																				-
Canyon Lake																				-
Saguaro Lake																				-
Tempe Town Lake																				-
Salt River Lower																				-
<b>Phoenix Urban Lakes</b>																				
Alvord Lake																				-
Chaparral Lake																				-
Cortez Lake																				-
Desert Breeze Lake																				-
Desert West Lake																				-
Encanto Lake																				-
Evelyn Hallman Pond																				-
Kiwanis Lake																				-
Papago Ponds																				-
Red Mountain Lake																				-
Rio Vista Pond																				-
Riverview Lake																				-
Steele Indian School Pond																				-
Surprise Lake																				-
Veterans Oasis Lake																				-
Water Ranch Lake																				-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number			
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>Phoenix Special Urban Lakes</b>																					
Crossroads Park																					-
Freestone Park																					-
McQueen Park																					-
Bonsall Park																					-
Pacana Park																					-
Granada Park																					-
Roadrunner Park																					-
Eldorado Park																					-
Indian School Park																					-
Vista del Camino Park																					-
Tempe Papago Park																					-
Water Treatment																					-
Discovery District Park																					-
Selleh Park																					-
<b>SANTA CRUZ RIVER</b>	X				X						X	X		X	X	X	X				8
<b>Upper Santa Cruz</b>																					
Parker Canyon	X													X							2
Patagonia																					-
Peña Blanca					X																1
<b>Middle Santa Cruz</b>																					
Rose Canyon	X											X			X	X					4
Fagen Tank																					-
<b>Pantano Wash-Rillito River</b>																					
Arivaca	X																				1

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																Total Number				
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Leemmon lily	Leemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly		Whisk fern	White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>Tucson Santa Cruz Complex</b>																					
Sahuarita Lake																					-
Kennedy Lake																					-
Lakeside Lake																					-
Silverbell Lake (and Archer Pond)																					-
<b>Tucson Santa Cruz Special Urban Lakes</b>																					
Reid Park					X		X														-
<b>VERDE RIVER</b>																					
<b>Big Chino Wash Complex</b>																					
Granite Basin Lake																					-
Garrett Tank																					-
Stone Dam																					-
Shucking Tank																					-
Presley Tank																					-
<b>Sycamore Complex</b>																					
Elk Tank																					-
JD Dam																					-
White Horse Lake																					-
Middle Tank																					-
Perkins Tank																					-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																	Total Number			
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern		White mandarin twisted stalk	White Mountain clover	Yellow lady's slipper
<b>Middle Verde Complex</b>																					
Mingus Lake																					-
Deadhorse Lake																					-
Verde River Middle																					-
Oak Creek																					-
Wet Beaver Creek																					-
West Clear Creek																					-
Huffer Lake							X														1
<b>Granite Creek Complex</b>																					
Watson Lake																					-
Goldwater Lake																					-
Willow Creek Reservoir																					-
<b>Lower Verde River Complex</b>																					
East Verde River																					-
Green Valley Lake																					-
<b>BILL WILLIAMS RIVER</b>			X																		<b>1</b>
<b>Santa Maria Complex</b>																					
Granite Mountain #1																					-
Granite Mountain #2																					-
Bass Tank																					-
Blue Tank																					-

**Table I. Recorded occurrence by species of other special status riparian plants.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Riparian Plants																			Total Number	
	A sedge	Alcove bog-orchid	Aravaipa wood fern	Arizona alum root	Arizona giant sedge	Arizona willow	Blumer's dock	Boreal bog orchid	Crenulate moonwort	Goodding's onion	Lemmon lily	Lemmon's stevia	Slender bog orchid	Texas purple spike	Thurber's bog orchid	Weeping muhly	Whisk fern	White mandarin twisted stalk	White Mountain clover		Yellow lady's slipper
<b>Burro Creek Complex</b>																					
Carter Tank																					-
Coor's Lake																					-
Antelope Tank																					-
Bar 37 Tank																					-
Harman Tank																					-
Harmon Tank #2																					-
Little Antelope Tank																					-
McElhaney Tank																					-
Stubb's Tank																					-
Swale Tank																					-
<b>Total Number of Site Occurrences<sup>2</sup></b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>8</b>	<b>29</b>	<b>6</b>	<b>2</b>	<b>14</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>10</b>	<b>104</b>

<sup>2</sup> Totals reflect only the number of occurrences within 5 miles of stocking sites and do not include additional occurrence records at the subcatchment level.

## **APPENDIX H**

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### **Recorded Occurrence by Species of Other Special Status Non-piscivorous Riparian/Aquatic Nesting Birds, Terrestrial Riparian Invertebrates, and Ground-dwelling Riparian Mammals and Reptiles**



**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>COLORADO RIVER– HAVASU CREEK</b>														–
<b>Havasu Creek Complex</b>														
Cataract Lake														–
City Reservoir														–
Dogtown Reservoir														–
Russell Tank														–
Santa Fe Tank														–
Kaibab Lake														–
<b>COLORADO RIVER–YUMA NORTH</b>														–
<b>Yuma Complex</b>														
La Paz County Park Pond														–
La Paz County Park Lagoon														–
<b>COLORADO RIVER–YUMA SOUTH</b>			X											<b>1</b>
<b>Yuma Complex</b>														
Yuma West Wetland														–
Hidden Shores			X											1

<sup>1</sup> Occurrences are based on Arizona Game and Fish Department Heritage Data Management System records within 5 miles of individual stocking sites and within subcatchment boundaries. Subcatchments are defined as the U.S. Geological Survey Hydrologic Unit Code (HUC) 10 subwatersheds that surround individual stocking sites and the HUC 12–level subwatersheds downstream of those stocking sites to the confluence of a major water body that supports nonnative aquatic species. Because they encompass larger areas, occurrence records in subcatchments are not necessarily reflected at one or more of the associated stocking sites.

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds							Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number	
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Beard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>LITTLE COLORADO RIVER</b>	X					X				X				<b>3</b>
<b>Little Colorado River Above Lyman Complex</b>														
Hulsey Lake														-
Pratt Tank														-
Nelson Reservoir														-
Lyman Reservoir														-
Carnero Lake									X					1
Becker Lake														-
<b>West Fork Little Colorado River</b>														
Mexican Hay Lake	X													1
Lee Valley Lake						X			X					2
Bunch Reservoir	X													1
River Reservoir	X													1
Tunnel Reservoir	X													1
White Mountain Reservoir						X			X					2
Little Colorado River Greer						X			X					2
Little Colorado River Sheep's Crossing						X			X					2
<b>Upper Little Colorado River</b>														
Little Ortega														-
Concho Lake														-
<b>White Mountain Complex</b>														
Sponseller														-
Silver Creek														-
Long Lake (Show Low)														-
Whipple														-
Little Mormon Lake														-

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Schoen's Complex</b>														
Woodland Lake														-
Rainbow Lake														-
Show Low Lake														-
Fool Hollow Lake														-
Scott's Reservoir														-
Show Low Creek														-
Mountain Meadows Recreation Complex														-
<b>Chevelon Creek Complex</b>														
Chevelon Canyon Lake														-
Long Tom														-
Willow Springs														-
Woods Canyon														-
<b>Black Canyon Lake</b>														
Black Canyon Lake														-
<b>Clear Creek Complex</b>														
Bear Canyon Lake														-
C.C. Cragin (Blue Ridge Reservoir)														-
Knoll Lake														-
<b>Clear Creek Reservoir</b>														
Clear Creek Reservoir														-
<b>Jack's Canyon Complex</b>														
Soldiers Annex														-
Long Lake (Diablo)														-
Soldiers														-
Tremaine Lake														-

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Canyon Diablo Complex</b>														
Mud Tank														-
Kinnikinick Lake														-
Coconino Lake														-
Morton Lake														-
Ashurst Lake														-
Francis Short Pond														-
<b>Walnut Creek Complex</b>														
Marshall Lake														-
Mormon Lodge Pond														-
Upper Lake Mary														-
Lower Lake Mary														-
<b>RIGGS FLAT</b>														
<b>Riggs Flat Lake</b>														
Riggs Flat Lake														-
<b>UPPER GILA RIVER</b>														
<b>Upper Gila</b>														
Cluff Pond #3												X		1
Dankworth Pond														-
Frye Mesa Lake												X		1
Graham County Fairgrounds														-
Roper Lake														-
<b>MIDDLE GILA RIVER</b>														
<b>Kearny</b>														
Kearny								X						1

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>LOWER GILA-YUMA</b>														-
<b>Lower Gila-Yuma Complex</b>														
Fortuna Pond														-
Redondo/Yuma Lake														-
Wellton Golf Course														-
<b>LUNA LAKE</b>														-
<b>Luna Lake</b>														
Luna Lake														-
<b>AGUA FRIA RIVER</b>	X								X					2
<b>Agua Fria River Complex</b>														
Fain Lake	X													1
Horse Thief Basin														-
Lynx Lake	X													1
<b>SALT RIVER</b>		X			X	X			X	X			X	6
<b>Black River Complex</b>														
Ackre Lake														-
Big Lake						X				X				2
Black River East Fork														-
Black River West Fork														-
Crescent Lake						X				X				2
<b>Canyon Creek Complex</b>														
Canyon Creek														-
<b>Workman Creek</b>														
Workman Creek														-

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Tonto Creek Complex</b>														
Tonto Creek														-
Christopher Creek														-
Haigler Creek														-
<b>Lower Salt Complex</b>														
Apache Lake														-
Canyon Lake														-
Saguaro Lake														-
Tempe Town Lake														-
Salt River Lower														-
<b>Phoenix Urban Lakes</b>														
Alvord Lake														-
Chaparral Lake														-
Cortez Lake														-
Desert Breeze Lake														-
Desert West Lake														-
Encanto Lake														-
Evelyn Hallman Pond														-
Kiwanis Lake														-
Papago Ponds														-
Red Mountain Lake														-
Rio Vista Pond		X												1
Riverview Lake														-
Steele Indian School Pond														-
Surprise Lake														-
Veterans Oasis Lake														-
Water Ranch Lake		X												1

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Phoenix Special Urban Lakes</b>														
Crossroads Park		X												1
Freestone Park		X												1
McQueen Park		X												1
Bonsall Park														-
Pacana Park														-
Granada Park														-
Roadrunner Park														-
Eldorado Park														-
Indian School Park														-
Vista Del Camino Park														-
Tempe Papago Park														-
Water Treatment														-
Discovery District Park														-
Selleh Park														-
<b>SANTA CRUZ RIVER</b>		<b>X</b>		<b>X</b>	<b>X</b>			<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>	<b>X</b>	<b>8</b>
<b>Upper Santa Cruz</b>														
Parker Canyon				X										1
Patagonia					X						X			2
Peña Blanca				X										1
<b>Middle Santa Cruz</b>														
Rose Canyon														-
Fagen Tank											X			1
<b>Pantano Wash–Rillito River</b>														
Arivaca Lake		X			X									2

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Tucson Santa Cruz Complex</b>														
Sahuarita Lake														-
Kennedy Lake											X			1
Lakeside Lake														-
Silverbell Lake/Archer Pond		X												1
<b>Tucson Santa Cruz Special Urban Lakes</b>														
Reid Park											X			1
<b>VERDE RIVER</b>	<b>X</b>							<b>X</b>						<b>2</b>
<b>Big Chino Wash Complex</b>														
Granite Basin Lake								X						1
Garrett Tank														-
Stone Dam														-
Shucking Tank														-
Presley Tank														-
<b>Sycamore Complex</b>														
Elk Tank														-
JD Dam														-
White Horse Lake														-
Middle Tank														-
Perkins Tank														-

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds							Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number	
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Middle Verde Complex</b>														
Mingus Lake														-
Deadhorse Lake														-
Verde River Middle														-
Oak Creek														-
Wet Beaver Creek														-
West Clear Creek														-
Huffer Lake														-
<b>Granite Creek Complex</b>														
Watson Lake	X							X						2
Goldwater Lake	X													1
Willow Creek Reservoir	X							X						2
<b>Lower Verde River Complex</b>														
East Verde River								X						1
Green Valley Lake								X						1
<b>BILL WILLIAMS RIVER</b>														
<b>Santa Maria Complex</b>														
Granite Mountain #1														-
Granite Mountain #2														-
Bass Tank														-
Blue Tank														-

**Table J. Recorded occurrence by species of other special status non-piscivorous riparian/aquatic nesting birds, terrestrial riparian invertebrates, and ground-dwelling riparian mammals and reptiles.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Non-piscivorous Riparian/Aquatic Nesting Birds								Terrestrial Riparian Invertebrates	Ground-dwelling Riparian Mammals and Reptiles				Total Number
	American redstart	Black-bellied whistling-duck	California black rail	Elegant trogon	Northern gray hawk	Pine grosbeak	Rose-throated Becard	Tropical kingbird	Maricopa tiger beetle	American water shrew	Arizona shrew	Giant spotted whiptail	Redback whiptail	
<b>Burro Creek Complex</b>														
Carter Tank														-
Coor's Lake														-
Antelope Tank														-
Bar 37 Tank														-
Harman Tank														-
Harmon Tank #2														-
Little Antelope Tank														-
McElhaney Tank														-
Stubb's Tank														-
Swale Tank														-
<b>Total Number of Site Occurrences<sup>2</sup></b>	<b>9</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>46</b>

<sup>2</sup> Totals reflect only the number of occurrences within 5 miles of stocking sites and do not include additional occurrence records at the subcatchment level.

**APPENDIX I**

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**Recorded Occurrence by Species of Other Special Status  
Piscivorous Riparian/Aquatic Nesting Birds**



**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>COLORADO RIVER— HAVASU CREEK</b>	X			X			X		<b>3</b>
<b>Havasu Creek Complex</b>									
Cataract Lake	X			X			X		3
City Reservoir	X						X		2
Dogtown Reservoir	X						X		2
Russell Tank									—
Santa Fe Tank	X			X			X		3
Kaibab Lake	X			X			X		3
<b>COLORADO RIVER— YUMA NORTH</b>					X	X			<b>2</b>
<b>Yuma Complex</b>									
La Paz County Park Pond									—
La Paz County Park Lagoon									—
<b>COLORADO RIVER— YUMA SOUTH</b>					X	X			<b>2</b>
<b>Yuma Complex</b>									
Yuma West Wetland					X			X	2
Hidden Shores					X	X			2
<b>LITTLE COLORADO RIVER</b>	X	X	X	X			X		<b>5</b>
<b>Little Colorado River Above Lyman Complex</b>									
Hulsey Lake	X								1
Pratt Tank									—
Nelson Reservoir	X			X					2
Lyman Reservoir									—
Carnero Lake									—
Becker Lake	X								1
<b>West Fork Little Colorado River</b>									
Mexican Hay Lake	X	X					X		3
Lee Valley Lake	X								1
Bunch Reservoir	X	X					X		3
River Reservoir	X	X					X		3
Tunnel Reservoir	X	X					X		3
White Mountain Reservoir	X	X					X		3
Little Colorado River Greer	X	X					X		3
Little Colorado River Sheep's Crossing	X	X							2

<sup>1</sup> Occurrences are based on Arizona Game and Fish Department Heritage Data Management System records within 5 miles of individual stocking sites and within subcatchment boundaries. Subcatchments are defined as the U.S. Geological Survey Hydrologic Unit Code (HUC) 10 subwatersheds that surround individual stocking sites and the HUC 12-level subwatersheds downstream of those stocking sites to the confluence of a major water body that supports nonnative aquatic species. Because they encompass larger areas, occurrence records in subcatchments are not necessarily reflected at one or more of the associated stocking site.

**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>Upper Little Colorado River</b>									
Little Ortega	X								1
Concho Lake	X								1
<b>White Mountain Complex</b>									
Sponseller	X			X					2
Silver Creek	X								1
Long Lake (Show Low)	X								1
Whipple	X								1
Little Mormon Lake	X								1
<b>Schoen's Complex</b>									
Woodland Lake	X								1
Rainbow Lake	X						X		2
Show Low Lake	X						X		2
Fools Hollow Lake	X								1
Scott's Reservoir	X						X		2
Show Low Creek	X								1
Mountain Meadows Recreation Complex	X						X		2
<b>Chevelon Creek Complex</b>									
Chevelon Canyon Lake	X								1
Long Tom	X	X	X	X					4
Willow Springs	X	X	X						3
Woods Canyon	X								1
<b>Black Canyon Lake</b>									
Black Canyon Lake									-
<b>Clear Creek Complex</b>									
Bear Canyon Lake									-
C.C. Craigin (Blue Ridge Reservoir)	X						X		2
Knoll Lake							X		1
<b>Clear Creek Reservoir</b>									
Clear Creek Reservoir									-
<b>Jack's Canyon Complex</b>									
Soldiers Annex	X			X					2
Long Lake (Diablo)	X			X					2
Soldiers	X								1
Tremaine Lake	X								1
<b>Canyon Diablo Complex</b>									
Mud Tank	X								1
Kinnikinick Lake									-
Coconino Lake	X								1
Morton									-
Ashurst Lake	X								1
Francis Short Pond	X								1

**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>Walnut Creek Complex</b>									
Marshall Lake	X						X		2
Mormon Lodge Pond	X						X		2
Upper Lake Mary	X						X		2
Lower Lake Mary	X						X		2
<b>RIGGS FLAT</b>	<b>X</b>								<b>1</b>
<b>Riggs Flat Lake</b>									
Riggs Flat Lake									-
<b>UPPER GILA RIVER</b>									
<b>Upper Gila</b>									
Cluff Pond #3									-
Dankworth Pond									-
Frye Mesa Lake									-
Graham County Fairgrounds									-
Roper Lake									-
<b>MIDDLE GILA RIVER</b>	<b>X</b>		<b>X</b>						<b>2</b>
<b>Kearny</b>									
Kearny									-
<b>LOWER GILA-YUMA</b>									
<b>Lower Gila-Yuma Complex</b>									
Fortuna Pond					X				1
Redondo/Yuma Lake					X				1
Wellton Golf Course									-
<b>LUNA LAKE</b>	<b>X</b>								<b>1</b>
<b>Luna Lake</b>									
Luna Lake	X								1
<b>AGUA FRIA RIVER</b>									
<b>Agua Fria River Complex</b>									
Fain Lake	X	X		X					3
Horse Thief Basin									-
Lynx Lake	X	X							2
<b>SALT RIVER</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>			<b>X</b>	<b>X</b>	<b>6</b>
<b>Black River Complex</b>									
Ackre Lake									-
Big Lake	X								1
Black River East Fork	X						X		2
Black River West Fork							X		1
Crescent Lake	X								1
<b>Canyon Creek Complex</b>									
Canyon Creek	X	X	X						3
<b>Workman Creek</b>									
Workman Creek			X						1

**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>Tonto Creek Complex</b>									
Tonto Creek			X						1
Christopher Creek			X						1
Haigler Creek			X						1
<b>Lower Salt Complex</b>									
Apache Lake	X			X					2
Canyon Lake	X			X					2
Saguaro Lake	X								1
Tempe Town Lake	X								1
Salt River Lower	X								1
<b>Phoenix Urban Lakes</b>									
Alvord Lake									-
Chaparral Lake									-
Cortez Lake									-
Desert Breeze Lake									-
Desert West Lake									-
Encanto Lake									-
Evelyn Hallman Pond	X								1
Kiwanis Lake	X								1
Papago Ponds	X								1
Red Mountain Lake									-
Rio Vista Pond									-
Riverview Lake	X								1
Steele Indian School Pond									-
Surprise Lake									-
Veterans Oasis Lake									-
Water Ranch Lake									-
<b>Phoenix Special Urban Lakes</b>									
Crossroads Park									-
Freestone Park									-
McQueen Park									-
Bonsall Park									-
Pacana Park									-
Granada Park									-
Roadrunner Park									-
Eldorado Park	X								1
Indian School Park	X								1
Vista Del Camino Park	X								1
Tempe Papago Park	X								1
Water Treatment	X								1
Discovery District Park									-
Selleh Park	X								1

**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>SANTA CRUZ RIVER</b>	X		X	X			X		<b>5</b>
<b>Upper Santa Cruz</b>									
Parker Canyon	X								1
Patagonia	X		X						2
Pena Blanca							X		1
<b>Middle Santa Cruz</b>									
Rose Canyon									-
Fagen Tank									-
<b>Pantano Wash-Rillito River</b>									
Arivaca							X		1
<b>Tucson Santa Cruz Complex</b>									
Sahuarita Lake									-
Kennedy Lake									-
Lakeside Lake									-
Silverbell Lake (and Archer Pond)									-
<b>Tucson Santa Cruz Special Urban Lakes</b>									
Reid Park									-
<b>VERDE RIVER</b>	X	X	X	X			X		<b>5</b>
<b>Big Chino Wash Complex</b>									
Granite Basin Lake									-
Garrett Tank				X					1
Stone Dam	X			X					2
Shucking Tank									-
Presley Tank									-
<b>Sycamore Complex</b>									
Elk Tank	X						X		2
JD Dam	X						X		2
White Horse Lake	X						X		2
Middle Tank	X			X			X		3
Perkins Tank	X						X		2
<b>Middle Verde Complex</b>									
Mingus Lake				X					1
Deadhorse Lake	X		X						2
Verde River Middle	X		X						2
Oak Creek	X		X						2
Wet Beaver Creek	X		X						2
West Clear Creek	X		X						2
Huffer Lake			X						1
<b>Granite Creek Complex</b>									
Watson Lake	X	X		X					3
Goldwater Lake	X								1
Willow Creek Reservoir	X	X		X					3

**Table K. Recorded occurrence by species of other special status piscivorous riparian/aquatic nesting birds.<sup>1</sup>**

SUBCATCHMENT/ Complex/ Site	Piscivorous Riparian/Aquatic Nesting Birds								Total Number
	Bald eagle	Belted kingfisher	Common black- hawk	Golden eagle	Great egret	Least bittern	Osprey	Snowy egret	
<b>Lower Verde River Complex</b>									
East Verde River			X						1
Green Valley Lake			X						1
<b>BILL WILLIAMS RIVER</b>	<b>X</b>		<b>X</b>	<b>X</b>					<b>3</b>
<b>Santa Maria Complex</b>									
Granite Mountain #1									-
Granite Mountain #2									-
Bass Tank									-
Blue Tank									-
<b>Burro Creek Complex</b>									
Carter Tank									-
Coor's Lake			X						1
Antelope Tank									-
Bar 37 Tank									-
Harman Tank									-
Harmon Tank 2									-
Little Antelope Tank									-
McElhaneey Tank									-
Stubb's Tank									-
Swale			X						1
<b>Total No. Site Occurrences<sup>2</sup></b>	<b>85</b>	<b>14</b>	<b>18</b>	<b>17</b>	<b>4</b>	<b>1</b>	<b>30</b>	<b>1</b>	<b>170</b>

<sup>2</sup> Totals reflect only number of occurrences within 5 miles of stocking sites and do not include additional occurrence records at the subcatchment level.

## **APPENDIX J**

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### **Consultation Species with Not Likely to Adversely Affect Findings, Including Rationale**



### Arizona treefrog Huachuca/Canelo Distinct Population Segment (DPS)

Arizona treefrogs are found in the Huachuca Mountains near the stocking site at Parker Canyon Lake.

The Proposed Action may affect, but is not likely to adversely affect, the Arizona treefrog in the DPS for the following reasons:

- While there is a potential for individual Arizona treefrogs to access Parker Canyon Lake and be exposed to stocked sport fish or their progeny, the likelihood of this would be low, based on habitat use by treefrogs. This effect would be discountable.
- Stocked sport fish would be unlikely to access treefrog habitats since they are not hydrologically connected to Parker Canyon Lake. This potential effect would be insignificant.
- Use of live bait fish and waterdogs is prohibited at Parker Canyon Lake. While use of waterdogs does occur illegally, the use is connected to illegally stocked sport fish species (largemouth bass, Northern pike) and not sport fish proposed for stocking, so there would be no direct connection between the Proposed Action and the use of waterdogs.

However, the Arizona treefrog was assessed in the larger discussion in the Biological Assessment (BA) and the draft Biological and Conference Opinion (BCO) for the potential of diseases and parasites or vectors that transmit them. These effects are part of the environmental baseline and cumulative effects analysis for illegal and inadvertent transport of unwanted aquatic organisms. This discussion is summarized in Chapter 6 of this Environmental Assessment (EA).

### Colorado pikeminnow

Colorado pikeminnow exist in certain ponds in the Arizona State University Research Park and at Karsten Golf Course. The status of the Colorado pikeminnow in these ponds is unknown, but it is presumed they still occur.

The Proposed Action may affect, but is not likely to adversely affect, the Colorado pikeminnow for the following reasons:

- The hydrological connections that could allow for fish movement between the proposed stocking sites and the occupied habitat of the Colorado pikeminnow are extremely limited, and the potential for movement of stocked sport fish to occupied Colorado pikeminnow habitat would be discountable.
- Colorado pikeminnow are in ponds containing nonnative fish species that, like some of the stocked species, may be predators of and competitors with the Colorado pikeminnow. Stocked Colorado pikeminnow were not expected to spawn in these ponds due to a lack of habitat, so the presence of nonnative fish was not deemed a reason not to stock the Colorado pikeminnow into these ponds. Only young-of-the-year, fingerling, or juvenile Colorado pikeminnow would be at risk of predation from stocked sport fish, and these age classes are not likely present in the ponds. The effects of predation would therefore be discountable.

### Colorado pikeminnow 10j

Colorado pikeminnow are currently stocked in the Verde River in the vicinity of Childs and Beasley Flat, which are located below the lowest Middle Verde stocking site (West Clear Creek).

The Proposed Action may affect, but is not likely to adversely affect, the Colorado pikeminnow 10j population for the following reasons:

- Colorado pikeminnow are stocked below the Middle Verde River stocking reach, and recent survey data have documented only recaptured Colorado pikeminnow in the vicinity of that stocking reach and in Horseshoe Lake farther downstream. Few stocked fish are likely to reach this area, so the effect would be discountable.
- Rainbow trout (the only fish proposed for stocking into the Middle Verde River stocking reach) would not be likely to prey on the stocked-sized Colorado pikeminnow, and there is no recruitment of Colorado pikeminnow in the Verde River that would provide small fish vulnerable to predation. Channel catfish that may escape from Green Valley Lake may, after residence in the Verde River, become large enough to prey on stocked Colorado pikeminnow; however, the number of such channel catfish would likely be so low as to be an insignificant effect.

### Desert pupfish

There would be no direct effects to desert pupfish from the Proposed Action. Indirect effects could occur if desert pupfish from the conservation sites were to move out of those sites and be exposed to stocked sport fish or their progeny or if stocked sport fish or their progeny could reach the conservation sites. The conservation sites potentially affected are the Phoenix Zoo and the Desert Botanical Garden and three sites in the Agua Fria River drainage (Larry Creek, Lousy Canyon, and Tule Creek).

The Proposed Action may affect, but is not likely to adversely affect, the desert pupfish for the following reasons:

- The reintroduced desert pupfish are in habitats at the Phoenix Zoo and the Desert Botanical Garden that are hydrologically isolated from the Phoenix metropolitan urban stocking sites, and stocked sport fish would be unlikely to reach the reintroduction sites.
- The reintroduced desert pupfish in Larry Creek, Lousy Canyon, and Tule Creek in the Agua Fria River drainage are separated from the Lynx and Fain lakes proposed stocking sites by ephemeral reaches of their home streams and the Agua Fria River. Stocked sport fish would not be able to access the reintroduction sites due to the presence of barriers to upstream movement from the Agua Fria River. Though it is possible to describe the circumstances of hydrological connectivity that would result in desert pupfish and stocked sport fish being in the Agua Fria River at the same time, these occasions would be extremely rare over the 10-year period covered by this consultation, and desert pupfish would not be expected to be exposed to stocked sport fish.

However, the desert pupfish was assessed in the larger discussion in the BA and draft BCO for the potential of diseases and parasites or vectors that transmit them. These effects are part of the

environmental baseline and cumulative effects analysis for illegal and inadvertent transport of unwanted aquatic organisms. This discussion is summarized in Chapter 6 of this EA.

#### Mexican spotted owl with critical habitat

Mexican spotted owl habitat—including portions of protected activity areas, buffers around protected activity areas, and designated critical habitat—is in proximity to 32 stocking sites in seven watersheds. There would be no direct effects from the proposed stocking action; effects would be related to anglers moving through Mexican spotted owl habitat to access fishing sites.

The Proposed Action may affect, but is not likely to adversely affect, the Mexican spotted owl and its designated critical habitat for the following reasons:

- The amount of human disturbance resulting from angler access to stocking sites during the Mexican spotted owl breeding season in and/or adjacent to protected activity areas would be insignificant and discountable. In addition, the key habitat components of Mexican spotted owl habitat would not be adversely affected by the Proposed Action.
- The amount of habitat disturbance resulting from anglers accessing the stocking sites would result in insignificant and discountable effects to primary constituent elements.

#### Mexican wolf 10j

The nonessential experimental population of Mexican wolves exists in the Apache National Forest in the action area for this consultation. Direct effects to Mexican wolves or their habitat are not expected from the Proposed Action. Effects to Mexican wolves would be limited to the potential for interactions between Mexican wolves and anglers pursuing stocked sport fish.

The Proposed Action may affect, but is not likely to adversely affect, the Mexican wolf 10j population for the following reasons:

- Wolf-human interactions between recreationists (including anglers) are rare and have only resulted in one wolf mortality since 1998. The mortality was not caused by an angler. Additional mortalities relating to recreationists are likely to be insignificant.
- Absent inducements, Mexican wolves avoid people.
- The final rule for establishment of the 10j population has provisions for people to legally harass wolves to scare them away from people, buildings, facilities, livestock, other domestic animals, and pets as long as the incident is reported to the U.S. Department of the Interior Fish and Wildlife Service within 7 days. If anglers encounter a wolf, they can legally (non-lethally) encourage the wolf to leave the area without causing prohibited take. Thus, the probability for non-legal take is discountable.

#### Page springsnail

Page springsnails are found in springs in the Oak Creek drainage in the vicinity of Page Springs and Bubbling Springs Pond, including at Page Springs State Fish Hatchery. The Proposed Action includes the stocking of rainbow trout into Oak Creek. Stocked rainbow trout would not be able to access occupied Page springsnail habitat, and anglers pursuing stocked trout would be unlikely to enter occupied habitat. The risk of contamination of occupied habitat by nonnative snail

species (such as New Zealand mud snail) through the Proposed Action would be limited by implementation of Hazard Analysis and Critical Control Points (HACCP) plans at hatcheries and normal operational procedures for acceptance and movement of stocked fish.

The Proposed Action may affect, but is not likely to adversely affect, the Page springsnail for the following reasons:

- Rainbow trout or anglers pursuing them would be unlikely to enter Page springsnail habitat, so the potential for effects would be insignificant.
- HACCP plans and standard hatchery operations would reduce the direct risk of contamination of occupied Page springsnail habitat through the activities of the Proposed Action to a discountable level.

#### Quitobaquito pupfish and designated critical habitat

The Quitobaquito pupfish is an endangered species with designated critical habitat at Quitobaquito Springs and Pond on the Organ Pipe Cactus National Monument.

The Proposed Action may affect, but is not likely to adversely affect, the Quitobaquito pupfish and its designated critical habitat for the following reasons:

- The pupfish habitat at Quitobaquito is hydrologically isolated from the stocking sites, and movement of stocked fish via connected waters would be unlikely to occur.
- There would be limited potential for the illegal or inadvertent movement of stocked sport fish or legal bait species by anglers from the stocking sites to Quitobaquito due to the distance between the stocking sites and Quitobaquito and because of the limited usefulness of the aquatic habitats at Quitobaquito to establish baitfish populations or a usable fishery. These effects would be insignificant.
- There would be a limited potential effect from non-anglers illegally or inadvertently moving stocked sport fish or legal bait to Quitobaquito due to the distance between Quitobaquito and any site that stocked fish or legal bait species. These effects would be discountable.
- Effects to the primary constituent elements of critical habitat related to the presence of nonnative species in the habitat are, as described in the preceding bullets, unlikely to occur. These effects are discountable.

However, the Quitobaquito pupfish was assessed in the larger discussion in the BA and draft BCO for the potential of diseases and parasites or vectors that transmit them. These effects are part of the environmental baseline and cumulative effects analysis for illegal and inadvertent transport of unwanted aquatic organisms. This discussion is summarized in Chapter 6 of this EA.

#### Sonora chub and designated critical habitat

The Sonora chub is a threatened species with designated critical habitat in the Sycamore Creek drainage of the Rio Magdalena in Pima County, Arizona. The Proposed Action includes stocking of warmwater sport fish species into Arivaca Lake and rainbow trout into Peña Blanca Lake.

The Proposed Action may affect, but is not likely to adversely affect, the Sonora chub and its designated critical habitat for the following reasons:

- Sonora chub habitat in Sycamore Creek and California Gulch is hydrologically isolated from the stocking sites, and movement of stocked fish via connected waters would be unlikely to occur.
- There would be some potential for illegal or inadvertent movement of stocked sport fish from the stocking sites to Yank Tank; however, no individuals of stocked species have been documented in the tank or in Sycamore Creek. Individuals of stocked species (bluegills) in California Gulch may have come from in-watershed sources. These potential effects would be discountable.
- Live bait fish are not allowed for fishing at either proposed stocking site, limiting the impetus for anglers to establish bait fish populations at Yank Tank. Waterdogs are legal for fishing at the two stocking sites; however, waterdogs are generally not used by anglers for the sport fish species proposed for stocking, so there would be limited impetus to establish waterdog populations for angling related to the Proposed Action. These potential effects would be discountable.
- Effects to the primary constituent elements of critical habitat related to the presence of nonnative species in the habitat would be, as described above, unlikely to occur. These effects would be discountable.

However, the Sonora chub was assessed in the larger discussion in the BA and draft BCO for the potential of diseases and parasites or vectors that transmit them. These effects are part of the environmental baseline and cumulative effects analysis for illegal and inadvertent transport of unwanted aquatic organisms. This discussion is summarized in Chapter 6 of this EA.

#### Sonoyta mud turtle

The Sonoyta mud turtle is a candidate species at Quitobaquito Springs and Pond on the Organ Pipe Cactus National Monument.

The Proposed Action may affect, but is not likely to adversely affect, the Sonoyta mud turtle for the following reasons:

- The Sonoyta mud turtle habitat at Quitobaquito is hydrologically isolated from the stocking sites, and movement of stocked fish via connected waters would be unlikely to occur.
- There would be limited potential for the illegal or inadvertent movement of stocked sport fish or legal bait species by anglers from the stocking sites to Quitobaquito due to the distance between the stocking sites and Quitobaquito and because of the limited usefulness of the aquatic habitats at Quitobaquito to establish baitfish populations or a usable fishery. These effects would be discountable.
- There is a limited potential effect from non-anglers illegally or inadvertently moving stocked sport fish or legal bait to Quitobaquito due to the distance between Quitobaquito and any site that stocked fish or legal bait species. These effects would be discountable.

However, the Sonoyta mud turtle was assessed in the larger discussion in the BA and draft BCO for the potential of diseases and parasites or vectors that transmit them. These effects are part of the environmental baseline and cumulative effects analysis for illegal and inadvertent transport of unwanted aquatic organisms. This discussion is summarized in Chapter 6 of this EA.

### Three Forks springsnail

Three Forks springsnail is a candidate species. They are found in the Three Forks Springs and Boneyard Bog Springs near the Three Forks area of the East Fork Black River. The Proposed Action includes stocking salmonids into five sites in the Black River Complex (Ackre Lake, Big Lake, Crescent Lake, East Fork Black River, and West Fork Black River). None of the stocking sites would include the area of the East Fork Black River closest to the tributary containing the Three Forks springsnail populations. The size of the spring and spring outfall areas occupied by the Three Forks springsnail is not sufficient to support salmonids, and none has been found in the occupied habitat. Anglers pursuing stocked sport fish would be unlikely to access the occupied habitat because no fishing is available. The risk of contamination of occupied habitat by nonnative snail species, such as New Zealand mud snail, through the Proposed Action would be limited by implementation of HACCP plans at hatcheries and normal operational procedures for acceptance and movement of stocked fish.

The Proposed Action may affect, but is not likely to adversely affect, the Three Forks springsnail for the following reasons:

- Stocked salmonids or anglers pursuing them would be unlikely to enter Three Forks springsnail habitats, so the potential for effects would be discountable.
- HACCP plans and standard hatchery operations would reduce the direct risk of contamination of occupied Three Forks springsnail habitat through the activities of the Proposed Action to a discountable level.

### Woundfin 10j

Woundfin were stocked in 2007 in the experimental population reach of the Hassayampa River near Wickenburg. The number of fish stocked (50) is low, and establishment of a population based on one stocking of this size is questionable. It is unclear, based on the status of the woundfin range-wide, whether additional fish to stock the Hassayampa River will be available over the next 10 years. The Proposed Action includes stocking of warm- and cold-water fish species into stocking sites in the Lower Salt River Complex and in any Urban Fishing or Special Urban Lakes that are connected to Tempe Town Lake. During flood events from the Salt or Verde rivers, stocked fish or their progeny could pass below Tempe Town Lake and arrive at the confluence with the Hassayampa River. If the Hassayampa River is also flooding, woundfin from the 10j population may be displaced downstream to the confluence with the Gila River.

The Proposed Action may affect, but is not likely to adversely affect, the woundfin 10j population for the following reason:

- The current status of the 10j woundfin population in the Hassayampa River is unknown; however, it is likely that the population is small, if it exists at all. That there is a population of woundfin present and available to be displaced downstream is discountable. If a population is

identified during monitoring of the woundfin in the Hassayampa River, or additional stockings are made, this concurrence may need to be reconsidered.

### Yellow-billed cuckoo

Yellow-billed cuckoo is a candidate species found in riparian areas during spring and fall migration and summer breeding seasons. They use dense cottonwood-willow and mesquite vegetation communities for nesting; migration habitat may be non-riparian or lower-quality riparian areas. There would be no direct effects from the stocking action on yellow-billed cuckoo or their habitat. Indirect effects would be from disturbance to nesting cuckoos from anglers accessing stocking sites and habitat degradation from the creation or maintenance of access routes through riparian vegetation to reach stocking sites.

The Proposed Action may affect, but is not likely to adversely affect, the yellow-billed cuckoo for the following reasons:

- Habitat of the yellow-billed cuckoo is dense and difficult to move through. This would likely discourage anglers seeking access to stocking sites from creating new trails, instead using existing access through riparian areas or areas with fewer or no trees. Using existing access through riparian areas would preclude their regeneration into yellow-billed cuckoo habitat. Further, habitat does not occur at the stocking site for nine of the 13 sites under consideration for possible effects, and habitat degradation from anglers is not likely occurring at those points. At the other four sites, anglers are only part of the recreational use, and, where stocking is seasonal, they are not present all the time. As a conservation measure, Wildlife and Sport Fish Restoration and the Arizona Game and Fish Department have agreed to evaluate potential effects to habitat and work with the U.S. Department of Agriculture Forest Service to address any issues. The effects to habitat would be discountable and insignificant.
- Nesting yellow-billed cuckoos are present at only two sites (Deadhorse Ranch and Oak Creek) during the active stocking season and at West Clear Creek and Wet Beaver Creek between the two stocking seasons (these two sites are stocked in spring and fall, not over the summer), but some anglers could be present at these sites during the breeding season. Nesting yellow-billed cuckoos are in dense habitat that is difficult to access, reducing the opportunity for anglers to get close to nests and cause disturbance. Yellow-billed cuckoos in heavily used recreation areas such as those under consideration likely nest away from trails and paths to avoid disturbances. The effects to yellow-billed cuckoos from disturbance would be insignificant.

### Yuma clapper rail

The Yuma clapper rail is found in cattail marshes on rivers and lakes along the Colorado, Gila, and Salt rivers. There would be no direct effects from the stocking action; effects would be related to the behavior of anglers at the stocking sites that are adjacent to suitable habitat for Yuma clapper rails.

The Proposed Action may affect, but is not likely to adversely affect, the Yuma clapper rail for the following reasons:

- Effects to habitat of Yuma clapper rails by anglers accessing shorelines by creating paths or trails through the marsh would be unlikely to occur. Dense marsh of the type favored by

Yuma clapper rails is difficult to move through, and where habitat is patchy, access is more easily gained at existing openings. Effects to habitat would be insignificant.

- Noise disturbance from shore or boat anglers has not been identified as a threat to Yuma clapper rails. Occupied habitats are in areas where recreational activities, including angling, occur regularly. The stocking sites where noise disturbance may occur are all in areas with recreational activities. Further, occupied Yuma clapper rail habitat is nearby, but not at the stocking sites. The attenuation of noise from the sites would reduce any potential disturbance to discountable levels.

**APPENDIX K**

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**Analysis of Potential Impacts to Other Special Status Fish Species**



**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>COLORADO RIVER WATERSHED (10 sites)</b>		
<b>Havasu Creek Subcatchment</b>		
Dogtown Reservoir, City Reservoir, Santa Fe Tank, Cataract Lake, Kaibab Lake, Russell Tank	Each of these lakes has the potential to spill. If fish escapement occurred, fish would need to travel 120 to 135 miles to reach lower Havasu Creek near its confluence with the Colorado River, which is the closest known location for documented occurrence of any speckled dace, bluehead suckers, and flannelmouth suckers (SSFS). The lower approximately 9 miles of Havasu Creek prior to entering the Colorado River is perennial and is on the Havasupai Indian Reservation. Species occurrence data are not available for reservation lands, but SSFS could occur in this lower reach.	<b>No effects anticipated</b> because of the extreme distance escaped fish would need to travel to reach the SSFS
<b>Yuma South and Yuma North Subcatchments</b>		
La Paz County Park Lagoon	There are no known occurrences of SSFS within the subcatchment.	<b>No effects anticipated</b>
Yuma West Wetland, Hidden Shores, La Paz County Park Pond	Systems are closed, and no SSFS are known from these sites.	<b>No effects anticipated</b>
<b>LITTLE COLORADO RIVER WATERSHED (52 sites)</b>		
<b>Analyzed as One Subcatchment</b>		
Pratt Tank, Carnero Lake	Systems are closed, and SSFS are not known from these locations.	<b>No effects anticipated</b>
Hulsey Lake	<p>This is an open system, and the lake fills and spills annually during spring runoff into Hulsey Creek, Milk Creek, and then into Nutrioso Creek. Speckled dace and bluehead suckers are known from downstream Nutrioso Creek, and Little Colorado River suckers are found farther downstream below Nelson Reservoir.</p> <p>Stocking strategies are in place that limit movement of stocked fish by stocking catchable-sized rainbow trout—and only after lake levels have subsided and a few inches of water remain over the spillway. Prior to spring stocking, few stocked trout are left in the lake because of high angler harvest, winter kill loss, and occasional summer kill loss.</p> <p>When the lake does spill, the depth of Lower Hulsey Creek near its confluence with Milk Creek is shallow (usually a half-inch or less), which would make fish movement into Milk Creek difficult. No fish have been found in three surveys in Milk Creek.</p> <p>Rainbow trout are proposed for stocking and have been established in Nutrioso Creek.</p>	<p>Speckled dace—<b>Low</b></p> <p>Little Colorado River sucker—<b>Low</b></p> <p>Bluehead sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement is possible but likely a rare occurrence and only in low numbers due to management of the fishery to prevent escapement</li> <li>• Downstream stream channel conditions make movement unlikely</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Nelson Reservoir	<p>This is an open system, and the lake spills when there is sufficient snowpack (it spilled in 5 of the past 10 years). Speckled dace and bluehead suckers are known from upstream and downstream in Nutrioso Creek, and Little Colorado River suckers are known from downstream in Nutrioso Creek. Upstream movement of fish is restricted because the inflow channel is not defined and the area is a shallow marsh. The Arizona Game and Fish Department (AGFD) manages the fishery to prevent escapement by stocking after the snowpack runoff has stopped. Annual surveys to detect stocked trout have been completed for 11 years, starting in 1996, and have detected five rainbow trout upstream (all in 2000) and 23 rainbow trout downstream.</p> <p>Rainbow trout are proposed for stocking and are established in Nutrioso Creek upstream of the reservoir and in at least one tributary downstream of the reservoir.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement is probable but likely only in low numbers due to management of the fishery to prevent escapement</li> <li>• Several surveys have detected only limited numbers of stocked fish upstream and downstream</li> </ul>
Becker Lake	<p>Becker Lake is an off-channel reservoir that is filled with water from the Little Colorado River, and a gabion fish barrier is present upstream of the site that prevents fish movement upstream (back into the Little Colorado River). The lake does not spill; however, water is released for irrigation purposes through a 14- to 16-inch-diameter outlet pipe that flows into an open ditch and then into the Little Colorado River. The valve on the pipe is only opened 1 inch during releases to limit fish escapement.</p> <p>Only catchables and subcatchables are proposed for stocking, and trout do not reproduce in the lake. Little Colorado River suckers are known from this site and in downstream Little Colorado River. Limited numbers of Little Colorado River suckers have been captured during surveys at this site, indicating that this species is not abundant at this site (12 total in annual surveys, 2004–2008). Speckled dace and bluehead sucker are known from downstream Little Colorado River.</p> <p>Rainbow trout, Apache trout, and Arctic grayling are proposed for stocking. Rainbow trout likely do not persist outside the stocking season in downstream Little Colorado River, based on two surveys in 1993 and one in 1999 that detected only three rainbow trout total in that area despite established populations upstream. This is likely due to the high summer water temperatures. Apache and Arctic grayling have similar temperature requirements and likely would not survive downstream in Little Colorado River.</p>	<p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement is possible but likely only in low numbers due to limited depth of releases</li> </ul> <p>Little Colorado River sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into Little Colorado River sucker–occupied areas</li> <li>• Based on surveys, Little Colorado River suckers are not abundant at site</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Lyman Reservoir	<p>This is an open system. The last spill was in 1993; however, water for irrigation is released directly into the Little Colorado River. Little Colorado River suckers are known from this site and in downstream and upstream Little Colorado River. Little Colorado River suckers were captured during surveys of this site in 1996, 1997, and 1998; however, annual surveys from 2000 to 2003 and 2008 did not capture any Little Colorado River suckers. Speckled dace and bluehead suckers are known from approximately 10 miles downstream (mostly ephemeral stream channel) and approximately 1 mile upstream (perennial).</p> <p>Rainbow trout are proposed for stocking. Rainbow trout likely only persist through the stocking seasonal in the upstream Little Colorado River, based on two surveys in 1993 and one in 1999 that detected only three rainbow trout total in that area despite established populations upstream. This is likely due to the high summer water temperatures.</p>	<p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement probable</li> <li>• Stocking less predacious species that would not survive beyond the stocking season due to high water temperatures</li> </ul> <p>Little Colorado River sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into Little Colorado River sucker–occupied areas</li> <li>• Based on surveys, Little Colorado River suckers are not abundant at site</li> </ul>
<b>West Fork Little Colorado River</b>		
White Mountain Reservoir	<p>This is an open system that spills annually during summer irrigation releases. Speckled dace are known from downstream Hall Creek (approximately 3 miles of intermittent stream channel) and farther downstream in the Little Colorado River. Bluehead suckers and Little Colorado River suckers are known from downstream Little Colorado River (approximately 6 additional miles of perennial stream channel beyond Hall Creek). To reach the Little Colorado River, fish would have to move through several private small impoundments. A survey in 1999 found only two rainbow trout in lower Hall Creek downstream of the private impoundments, and these fish could have moved upstream from the Little Colorado River, where wild rainbow trout occur.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1969. Rainbow trout are established in the Little Colorado River near the confluence with Hall Creek.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement is possible but likely only in low numbers because of distance and impoundment barriers that would likely limit movement, based on survey results</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Lee Valley Lake	<p>Lee Valley Creek below the dam at Lee Valley Lake enters the East Fork Little Colorado River, but water is not released into the creek out of the outlet valve. AGFD holds water rights at Lee Valley Lake and does not release this water for irrigation or other purposes. However, the lake spills during high-water events through an unnamed tributary of the West Fork Little Colorado River.</p> <p>Speckled dace and bluehead suckers are known from the West Fork Little Colorado River downstream of the Apache trout recovery area and the constructed fish barriers. It is approximately 4.5 miles downstream from the spillway at Lee Valley Lake to areas occupied by these two species. Speckled dace and bluehead suckers are also known from the East Fork Little Colorado River and farther downstream in the Little Colorado River. Little Colorado River suckers are known from River Reservoir and farther downstream in the Little Colorado River.</p> <p>Apache trout and Arctic grayling are proposed for stocking; both have been stocked since 1965. Arctic grayling have not been detected in the West Fork Little Colorado River during three complete chemical renovations in 2006 and several surveys from 1982 to 2003. Apache trout are established in the West Fork Little Colorado River above fish barriers that prevent nonnative species from moving upstream. Brown trout are established downstream of the barriers and would likely preclude Apache trout from establishing populations if Apache trout moved downstream of the barriers.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement is possible during annual spilling only</li> <li>• Surveys have not detected Arctic grayling in the West Fork Little Colorado River, suggesting that the species does not reach the West Fork Little Colorado River or does not survive there</li> <li>• The frequency and magnitude of Apache trout movement into the West Fork Little Colorado River is not known, but if they move, movement to SSFS-occupied areas would likely be in low numbers and limited to spring spill season and by the distance to SSFS-occupied areas</li> <li>• Apache trout is a native fish</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<p>West Fork Little Colorado River at Sheep's Crossing, West Fork Little Colorado River at Greer</p>	<p>Stocked fish have the ability to move upstream to the headwaters of the West Fork Little Colorado River, or downstream, over the fish barriers, into the lower West Fork Little Colorado River. These are open stream reaches, and speckled dace and bluehead suckers are known from the West Fork Little Colorado River downstream of the Apache trout recovery area and the constructed fish barriers in the Greer stocking reach. The Sheep's Crossing reach is approximately 2 miles upstream of the Little Colorado River Greer reach. These species are also known from tributary East Fork Little Colorado River, which meets the West Fork within the Greer Stocking reach. The Greer stocking reach extends up the East Fork for approximately 1 mile, and the SSFS are known from just upstream of the stocking reach. Little Colorado River suckers and bluehead suckers are known from River Reservoir (approximately 1 perennial mile downstream). All three species are known from Little Colorado River downstream of the River Reservoir. Population status of these SSFS in the River Reservoir and upstream watershed is not known.</p> <p>Apache trout are proposed for stocking at Sheep's Crossing, and Apache and rainbow trout at Greer. Rainbow trout have been stocked at Greer since 1936. Apache trout are established in West Fork Little Colorado River in the Sheep's Crossing reach above fish barriers that prevent nonnative species from moving upstream. Apache and rainbow trout could potentially establish a population in the Little Colorado River below barriers, but they have not, based on multiple surveys. Presumably established brown trout prohibit Apache trout or rainbow trout from establishing populations within the stocking reaches below the Apache trout recovery area.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Little Colorado River sucker–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking into a speckled dace and bluehead sucker–occupied area, in the case of the Greer stocking reach, and into an open stream reach only (2 miles upstream from an occupied area) in the case of Sheep's Crossing</li> <li>• Little Colorado River suckers are found about 1 mile downstream of the Greer stocking reach</li> <li>• These SSFS are either not abundant or are not adequately surveyed in the West Fork Little Colorado River, the East Fork Little Colorado River, and River Reservoir</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
River Reservoir	<p>This is an open system. The lake spills annually during high water and is connected perennially to the upper watershed. Little Colorado River suckers and bluehead suckers are known from this site. Speckled dace, bluehead suckers, and Little Colorado River suckers are known from downstream, and speckled dace and bluehead suckers are known from upstream.</p> <p>Rainbow trout and Apache trout are proposed for stocking. Apache trout established in Sheep’s Crossing reach above barriers. Apache and rainbow trout could potentially establish a population in the Little Colorado River below barriers and above the River Reservoir but have not, based on surveys. Presumably, established brown trout prohibit Apache trout or rainbow trout from establishing populations in this area.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Little Colorado River sucker–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species but directly into Little Colorado River sucker and bluehead sucker areas</li> <li>• Movement to speckled dace–occupied areas probably in moderate to high numbers</li> <li>• The population status of these SSFS in River Reservoir and upstream is not known</li> </ul>
Bunch Reservoir, Tunnel Reservoir	<p>These are open systems. For Bunch Reservoir, stocked fish could move downstream (approximately 1.5 miles) into lower Hall Creek and into Little Colorado River below River Reservoir during summer irrigation releases; for Tunnel Reservoir, fish could move into River Reservoir during summer irrigation releases and then upstream or downstream from there. At both reservoirs, fish can also move upstream into the Little Colorado River above River Reservoir during winter/spring filling season.</p> <p>Speckled dace are known from downstream Hall Creek and the Little Colorado River below River Reservoir. Bluehead suckers and Little Colorado River suckers are known from River Reservoir and downstream Little Colorado River below River Reservoir. Speckled dace and bluehead suckers are known from upstream Little Colorado River.</p> <p>Rainbow trout and Apache trout are proposed for stocking.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Little Colorado River sucker–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement to SSFS areas is probable in moderate to high numbers due to summer irrigation releases</li> <li>• The population status of these SSFS in River Reservoir and upstream is not known</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Mexican Hay Lake	<p>This is an open system but does not spill. Water could potentially be released for irrigation but currently is not, and irrigation is not planned. If water is released, stocked fish could move into the South Fork Little Colorado River and then into the Little Colorado River.</p> <p>Speckled dace and Little Colorado River suckers are known from the lower South Fork Little Colorado River approximately 5 miles downstream and from farther downstream in the Little Colorado River and tributaries. Bluehead suckers are known from farther downstream in the Little Colorado River and tributaries.</p> <p>Apache trout are proposed for stocking, and an Apache trout population is established downstream in the upper South Fork Little Colorado River.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement to SSFS-occupied areas is not likely because water is currently not released and there are no plans to do so in the future</li> </ul>
<b>Upper Little Colorado River Complex</b>		
Little Ortega, Concho Lake	These are closed systems, and no SSFS are known from these sites. Concho Lake is an open lake, but the drainage system is closed.	<b>No effects anticipated</b>
<b>White Mountain Complex</b>		
Sponseller Lake	This is a closed system, and no SSFS are known from this site.	<b>No effects anticipated</b>
Silver Creek	<p>This is an open stream reach, and speckled dace and bluehead suckers are known from the stocking reach. Little Colorado River suckers are known from farther downstream in lower Silver Creek. To reach Little Colorado River sucker–occupied areas, stocked fish would have to travel approximately 5.5 miles down to White Mountain Reservoir, through the reservoir, then approximately 20 miles downstream (interrupted/perennial). White Mountain Reservoir spills annually during spring runoff, and water is released through irrigation releases during summer.</p> <p>Rainbow trout and Apache trout are proposed for stocking. Trout do not reproduce in Silver Creek, possibly due to the warm water temperatures affecting egg development or limited spawning substrate (clean gravel), but trout can persist in upper Silver Creek (based on survey data). Trout would not likely persist in White Mountain Reservoir or downstream of the reservoir due to the high summer temperatures.</p> <p>Twelve surveys below White Mountain Lake from 1991 to 2009 have not detected trout.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species, but directly into bluehead sucker and speckled dace–occupied reach</li> <li>• These SSFS are not abundant or are not adequately surveyed in a stocking reach to determine population status</li> </ul> <p>Little Colorado River sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement to Little Colorado River sucker–occupied areas is possible but not likely due to the extended distance and intervening reservoir</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Little Mormon Lake	<p>This is an open site, and SSFS are known from downstream. Escaped fish would have to travel through Rocky Arroyo to White Mountain Lake and back upstream into Silver Creek or through the lake into lower Silver Creek. White Mountain Lake has an existing reproducing population of channel catfish.</p> <p>Catchable-sized channel catfish are proposed for stocking, and a grate is over the outflow, which would prevent the catchable-sized fish from escaping. It is not known whether channel catfish can reproduce at this site, but the lake has virtually no cover, which is preferred by catfish for spawning. If catfish were able to spawn in this lake, juvenile catfish might be able to escape through the grate structure during irrigation releases. Juvenile catfish would then have to travel 6 miles downstream to White Mountain Lake, then upstream into Silver Creek to reach speckled dace and bluehead sucker-occupied areas. Or they would travel through the dam at White Mountain Lake and approximately 14 miles downstream to additional areas occupied by bluehead suckers or an additional approximately 6 miles to reach areas occupied by Little Colorado River suckers.</p> <p>Channel catfish are established in White Mountain Lake.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement not likely due to a grate on outflow and stocking only catchable-sized catfish</li> <li>• Even if catfish were able to spawn (no known spawning habitat), channel catfish are established in White Mountain Reservoir, which is between this site and SSFS-occupied areas</li> </ul>
Whipple Lake, Long Lake	These are open sites, but fish movement is only possible between lakes. No SSFS are known from these lakes.	<b>No effects anticipated</b>
<b>Schoen’s Complex</b>		
Woodland Lake	<p>This is an open site, and speckled dace and bluehead suckers are found downstream in Walnut Creek, which runs about 3 miles between Woodland Lake and Rainbow Lake. Woodland Lake spills annually during spring runoff and occasionally in the late summer, plus water is occasionally released into Walnut Creek for irrigation use downstream. Little Colorado River suckers are known from Silver Creek downstream of Fool Hollow Lake, the most downstream lake in this complex. (See analysis for Fool Hollow Lake.)</p> <p>Channel catfish, rainbow trout, and bluegill are proposed for stocking. Channel catfish have been stocked since 1978, and rainbow trout have been stocked since 1936. Bluegills have established in the lake from a 1986 stocking. None of the stocked species was detected in a 2009 survey of Walnut Creek. Three fingerling rainbow trout were detected in a 1997 survey. Walnut Creek is likely not suitable habitat for rainbow trout or bluegills; this is supported by surveys in 1997 (three rainbow trout) and 2009 (no rainbow trout captured). The small-stream habitat of Walnut Creek is not suitable habitat for channel catfish or bluegills.</p>	<p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is possible</li> <li>• A recent survey did not detect stocked species, and a 1997 survey detected only three rainbow trout despite a long stocking history of rainbow trout and channel catfish</li> </ul> <p>Little Colorado River sucker–<b>No effects anticipated</b></p> <p>(See analysis for Fool Hollow Lake)</p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Mountain Meadow Recreation Complex	<p>This is an open site, and speckled dace and bluehead suckers are found downstream in Walnut Creek. The lake spills during spring runoff and heavy rain events. Little Colorado River suckers are known from Silver Creek downstream of Fool Hollow Lake (see analysis for Fool Hollow Lake).</p> <p>Rainbow trout and bluegill are proposed for stocking. Walnut Creek is likely not suitable habitat for stocked species, based on surveys in 1997 (three rainbow trout) and 2009 (no rainbow trout captured). Rainbow trout have been stocked upstream in Woodland Lake since 1936 and downstream in Rainbow Lake since 1933. The small-stream habitat of Walnut Creek is not suitable habitat for bluegills.</p>	<p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement probable but stocked fish not likely to survive long-term due to inadequate habitat</li> </ul> <p>Little Colorado River sucker–<b>No effects anticipated</b></p> <p>(See analysis for Fool Hollow Lake)</p>
Rainbow Lake	<p>This is an open site, and speckled dace and bluehead suckers are found upstream in Walnut Creek. There is an old hydroelectric power plant dam that serves as a partial barrier to fish passage upstream, but it is only 3 feet tall. Trout could leap the barrier during moderate or higher flows, but warm-water species would be prevented from moving upstream. Little Colorado River suckers are known from downstream in Silver Creek, downstream of Fool Hollow Lake (see analysis for Fool Hollow Lake).</p> <p>Channel catfish, rainbow trout, bluegill, and largemouth bass are proposed for stocking. Channel catfish have been stocked since 1965, and rainbow trout have been stocked since 1933.</p> <p>Channel catfish, rainbow trout, and bluegill were not detected in a 2009 survey of the SSFS-occupied reach. Largemouth bass were detected in low numbers but likely came from upstream Woodland Lake, where they are established.</p>	<p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less and more predacious species</li> <li>• Movement to SSFS-occupied areas possible but not likely for all species except rainbow trout due to a 3-foot dam that likely serves as a barrier</li> <li>• Surveys in 2009 did not detect rainbow trout despite stocking rainbow trout since 1933</li> </ul> <p>Little Colorado River sucker–<b>No effects anticipated</b></p> <p>(See analysis for Fool Hollow Lake)</p>
Scott Reservoir, Show Low Lake, Show Low Creek, Fool Hollow Lake	<p>These are open sites, and all sites drain into Fool Hollow Lake. Speckled dace and bluehead suckers are found upstream in Walnut Creek, but stocked fish are prevented from movement into this area by the dam at Rainbow Lake. Speckled dace, bluehead suckers, and Little Colorado River suckers are also found approximately 25 miles downstream (approximately 18 miles ephemeral and approximately 7 miles perennial) of Fool Hollow Lake in Silver Creek. There are also two large intervening flood-control dams designed to retain water; these are normally dry.</p>	<p><b>No effects anticipated</b> because of the extensive distance of the ephemeral stream channel and intervening flood-control structures that retain floodwater</p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Chevelon Creek Complex</b>		
Long Tom Tank	<p>This tank has a small ephemeral watershed and no outlet. It is unknown whether the tank spills. If it did, it would spill into ephemeral Larson Canyon for 3.3 miles to ephemeral Long Tom Canyon for an additional 4.1 miles to Chevelon Creek, where speckled dace and Little Colorado River suckers are known. Bluehead suckers are known from Chevelon Creek and tributaries more than 10 miles farther downstream.</p> <p>Rainbow trout are proposed for stocking. Chevelon Creek has an established population of rainbow trout.</p>	<p>Speckled dace–<b>Low</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement to SSFS-occupied areas possible but probably only rarely (because of lack of outlet and lack of evidence indicating spilling)</li> <li>• More than 7 miles of ephemeral reach</li> </ul>
Willow Springs Lake	<p>This site spills annually during spring runoff into Willow Springs Canyon and then flows approximately 3.4 miles to Chevelon Creek. Speckled dace are known from Willow Springs Canyon, and speckled dace and Little Colorado River suckers are known from an additional 3.5 miles downstream in Chevelon Creek. Bluehead suckers are known from Chevelon Creek and tributaries more than 12 miles downstream. Surveys indicate speckled dace are numerous in Chevelon Creek.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1968.</p> <p>Stocked rainbow trout were not detected in the speckled dace–occupied habitat immediately below this lake during surveys in 1991 and 1995, though brook and brown trout (both stocked until 1995) were detected, indicating either lack of escapement or lack of persistence of rainbow trout from the stocking site. Any escaped trout may join a reproducing population of rainbow trout in Chevelon Creek.</p>	<p>Speckled dace–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement to occupied habitat is possible</li> <li>• Stocking less predaceous species</li> </ul> <p>Little Colorado River sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible</li> <li>• Stocking less predacious species</li> <li>• Survey information</li> <li>• Distance to occupied habitats</li> </ul> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible</li> <li>• Stocking less predacious species</li> <li>• Distance to occupied habitats</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Woods Canyon	<p>The site spills annually during spring runoff into Woods Canyon and then approximately 5.8 miles to Chevelon Creek. Speckled dace are known from Woods Canyon, and speckled dace and Little Colorado River suckers are known from an additional 3.5 miles downstream in Chevelon Creek. Bluehead suckers are known from Chevelon Creek and tributaries more than 12 miles downstream. Surveys indicate speckled dace are numerous in Chevelon Creek.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1957. Two rainbow trout were detected in 1995 in Woods Canyon; due to lack of spawning habitat, it is likely they came from the lake. Any escaped trout may join a reproducing population of rainbow trout in Chevelon Creek.</p>	<p>Speckled dace–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible</li> <li>• Stocking less predaceous species</li> <li>• A survey in 1995 detected only two rainbow trout, indicating that they do not move downstream in high numbers</li> </ul> <p>Little Colorado River sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible</li> <li>• Stocking less predacious species</li> <li>• Survey information</li> <li>• Distance to occupied habitats</li> </ul> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible</li> <li>• Stocking less predacious species</li> <li>• Distance to occupied habitats</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Chevelon Canyon Lake	<p>This lake spills every year during spring runoff into Chevelon Creek. Fish can move downstream when the lake spills and upstream into Chevelon Creek.</p> <p>Speckled dace and Little Colorado River suckers occur at this site.</p> <p>Chevelon Creek upstream contains speckled dace and Little Colorado River suckers and immediately downstream has contained speckled dace, Little Colorado River suckers, and bluehead suckers. Annual surveys from 2004 to 2008 indicate that Little Colorado River suckers are abundant in the reservoir. The speckled dace population status in the lake is not known due to the lack of surveys targeted at small-bodied fish.</p> <p>Rainbow trout (stocked since 1966) and Arctic grayling (stocked three times since 1968) are proposed for stocking. Several surveys have not detected Arctic grayling upstream or downstream. Rainbow trout are established in the stream above Chevelon Canyon Lake and have been detected during several surveys in downstream Chevelon Creek (present in only five of 60 date/location sampling events, total N=7 with two of the five detections reporting them as “present”).</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Little Colorado River sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into occupied habitat</li> <li>• Speckled dace population status is not known</li> <li>• Little Colorado River suckers appear to be abundant in the reservoir, based on surveys, despite stocking these two species since the 1960s</li> </ul> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• SSFS are located downstream from lake</li> <li>• Movement is probable but only when the site spills</li> <li>• Data indicate stocked species are rare, which indicates limited movement or limited survival once stocked species move</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Black Canyon Complex</b>		
Black Canyon Lake	<p>This site spills during spring runoff only during years with a heavy snowpack or heavy winter precipitation. The downstream reach is ephemeral for more than 50 miles before it reaches Chevelon Creek. Little Colorado River suckers and bluehead suckers are known from this site and downstream in Chevelon Creek. Speckled dace are known from downstream Chevelon Creek.</p> <p>Rainbow trout and brook trout are proposed for stocking.</p>	<p>Little Colorado River sucker–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into SSFS-occupied habitat</li> <li>• Little Colorado River suckers and bluehead suckers are not abundant in reservoir</li> </ul> <p>Speckled dace–<b>No effects anticipated</b> because of extensive distance of ephemeral stream channel to speckled dace–occupied areas.</p>
<b>Clear Creek Complex</b>		
C.C. Cragin Reservoir	<p>This lake spilled in three of the past 10 years. Water is also released continuously through a 2-inch pipe. Water releases and spills go into East Clear Creek, which downstream turns into Clear Creek. Stocked fish can also move into the upstream watershed. Speckled dace, bluehead suckers, and Little Colorado River suckers are known from immediately downstream and upstream of this site. Little Colorado River suckers are known from this site.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1965. One of the upper tributaries has been surveyed annually from 2003 to 2009; other tributaries were surveyed from 2008 to 2009, and no rainbow trout were detected. Several surveys downstream have only detected one stocked rainbow trout (stocked fish were marked), but wild rainbow trout were present in higher numbers.</p>	<p>Little Colorado River sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into Little Colorado River sucker–occupied habitat</li> <li>• Little Colorado River suckers are not abundant in reservoir</li> </ul> <p>Speckled dace–<b>Low</b></p> <p>Bluehead sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Survey data indicate low movement of stocked fish into areas occupied by these SSFS or low survival of fish if they do move</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Knoll Lake	<p>This lake spills during spring runoff into East Leonard Canyon, then Leonard Canyon, and then into East Clear Creek.</p> <p>Bluehead suckers and speckled dace are known from the reservoir (zero to three bluehead suckers captured during surveys and zero to 97 speckled dace captured, but survey methods did not target small-bodied fish). Bluehead suckers, speckled dace, and Little Colorado River suckers are known throughout the downstream watershed.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1963. East Clear Creek and Leonard Canyon maintain reproducing rainbow trout populations. Monitoring of Dines Tank in 2006 (downstream tank in the mainstem Leonard Canyon that contains all these SSFS) and West Leonard Creek upstream of the confluence with East Leonard Creek did not detect stocked rainbow trout.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Bluehead sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into bluehead sucker and speckled dace–occupied habitat</li> <li>• These species are not abundant in reservoir or are not adequately surveyed</li> </ul> <p>Little Colorado River sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement of stocked fish to SSFS-occupied areas is possible due to annual spills</li> <li>• Downstream monitoring has not detected stocked rainbow trout, suggesting that if movement occurs, it is in low numbers or fish do not survive downstream</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Bear Canyon Lake	<p>This lake spills annually during spring runoff into mostly ephemeral Bear Canyon for 4.2 miles and then into Willow Creek. Fish could move downstream during this period.</p> <p>Bluehead suckers, Little Colorado River suckers, and speckled dace are known from 3.5 miles downstream in Willow Creek and more than 20 miles farther downstream in Clear Creek.</p> <p>Rainbow trout (stocked since 1984) and Arctic grayling (stocked since 1965) are proposed for stocking. A survey of Bear Canyon in 1997 captured one rainbow trout and no Arctic grayling, and four surveys from 1991 to 2009 of Willow Creek did not detect any rainbow trout or Arctic grayling.</p>	<p>Speckled dace—<b>Low</b></p> <p>Little Colorado River sucker—<b>Low</b></p> <p>Bluehead sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement of stocked fish to SSFS-occupied areas is possible, based on annual spilling</li> <li>• A survey detected one rainbow trout below the dam; however, the limited number (only one) of rainbow trout in surveys indicates that movement is in low numbers or fish do not survive when they move</li> </ul>
<b>Clear Creek Reservoir</b>		
Clear Creek Reservoir	<p>This lake spills annually during spring runoff, and water is released annually during summer irrigation into Clear Creek and then into the Little Colorado River. Fish could potentially move downstream into the Little Colorado River and tributaries. Stocked fish could also move upstream during spring runoff into Clear Creek.</p> <p>Little Colorado River suckers are known from the reservoir (present in some surveys but not all) and throughout the upstream watershed and in an adjacent tributary of the Little Colorado River—Chevelon Creek. Bluehead suckers and speckled dace are known from upstream Clear Creek and tributaries (more than 32 miles upstream) and in an adjacent tributary of the Little Colorado River, Chevelon Creek (0.5 mile to Little Colorado River and then approximately 9.5 miles upstream to confluence with Chevelon Creek; and there is a diversion structure 1.7 miles upstream in Chevelon Creek that serves as a likely obstruction, but not complete barrier, to fish movement upstream).</p> <p>Rainbow trout are proposed for stocking.</p>	<p>Speckled dace—<b>Low</b></p> <p>Bluehead sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement of stocked fish to these SSFS is not likely due to the extensive distance to upstream populations and the distance and partial barrier to adjacent tributary populations</li> </ul> <p>Little Colorado River sucker—<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly into Little Colorado River sucker-occupied habitat</li> <li>• Based on survey data, this species is not abundant in the reservoir</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Jack's Canyon Complex</b>		
Soldiers Annex, Long Lake (Diablo), Soldiers Lake, Tremaine Lake	These lakes are open. Bluehead suckers, speckled dace, and Little Colorado River suckers are known from the Little Colorado River and tributaries. To reach SSFS-occupied areas, stocked fish would have to move more than 10 miles of a complex series of ditches and tanks to reach Diablo Canyon, which is ephemeral for 46 miles before entering the Little Colorado River.	<b>No effects anticipated</b> because the extensive distance of the ephemeral streambed and the complex system of ditches and tanks make movement of stocked fish to SSFS-occupied areas highly unlikely.
<b>Canyon Diablo Complex</b>		
Kinnikinick Lake, Morton Lake, Mud Lake, Frances Short Pond	All of these sites drain into Canyon Diablo and into the Little Colorado River. The nearest SSFS are in the Little Colorado River portion of the Grand Canyon, more than 100 miles downstream. In this location, speckled dace, bluehead suckers, and flannelmouth suckers are present. SSFS are also present in the lower portion of Clear Creek, which is 40 miles or more downstream to the Little Colorado River and then back upstream 46 miles, most of which is ephemeral or interrupted perennial stream channel. In this location, only Little Colorado River suckers and speckled dace are known to occur.	<b>No effects anticipated</b> because the extreme distance and ephemeral nature of connecting channels make movement of stocked fish to SSFS-occupied areas highly unlikely.
Ashurst Lake, Coconino Lake	The lakes are open but water connects only between them and into a dead-end meadow and, therefore, the system is a closed system. SSFS are not known from this system.	<b>No effects anticipated</b>
<b>Walnut Creek Complex</b>		
Mormon Lodge Pond, Marshall Lake, Upper Lake Mary, Lower Lake Mary	The Walnut Creek Complex is considered a closed system. No SSFS occur in this system.	<b>No effects anticipated</b>
<b>WHITEWATER DRAW-WILLCOX PLAYA (1 site)</b>		
<b>Riggs Flat Subcatchment</b>		
Riggs Flat	Any flow leaving Riggs Flat Lake terminates in sheet flow into the Willcox Playa and is not hydrologically connected to any drainages outside of the Willcox Playa; therefore, Riggs Lake is considered a closed system.  There are no SSFS located in the subcatchment.	<b>No effects anticipated</b>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>GILA RIVER WATERSHED (13 sites)</b>		
<b>Luna Lake Subcatchment</b>		
Luna Lake	<p>This is an open lake that spills during precipitation events, primarily in spring during snowmelt and irrigation releases. Fish can move downstream into the San Francisco River. SSFS are not known from upstream of the lake. Speckled dace and desert suckers are known from the river reach immediately below the lake to the Arizona border, a 2.5-mile reach. All four species are present farther downstream, in the Tularosa River below Reserve, New Mexico. It is 30 miles from the lake to the Tularosa/San Francisco confluence, and then back upstream in the Tularosa 10 miles to New Mexico’s annual monitoring site.</p> <p>Rainbow trout and cutthroat trout are proposed for stocking. Cutthroat trout have not been detected in the San Francisco River at either of New Mexico’s two annual monitoring sites in 20 years of surveys. Monitoring sites are in the Tularosa River (previously mentioned) and at Glenwood, New Mexico, more than 60 miles downstream from the stocked lake. Rainbow trout were collected below the lake in Arizona during several years in the area where speckled dace and desert suckers were detected in 2009. Rainbow trout were also caught in New Mexico in one of 21 years of annual surveys at the Tularosa monitoring site and in several years at the Glenwood site. There are wild rainbow trout populations in tributaries of the San Francisco River and Tularosa River, where the trout may have originated. Water temperatures in the San Francisco River downstream of Reserve, New Mexico (about 27 miles downstream from the lake), have been described as unsuitable for year-round trout survival.</p>	<p>Speckled dace–<b>Moderate</b> Desert sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Stocking directly upstream of occupied habitat</li> <li>• Spills have been documented and trout have been collected in occupied areas immediately below the lake</li> </ul> <p>Sonora sucker–<b>Low</b> Longfin dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is possible based on hydrological connectivity</li> <li>• If they do move, it is likely in low numbers due to extensive distance</li> <li>• Surveys have not detected cutthroat and only detected rainbow trout in one of 21 annual surveys in the nearest monitoring location</li> <li>• Stocking less predacious species that, if they moved downstream, would not survive outside the stocking season due to high water temperatures</li> </ul>
<b>Upper Gila Subcatchment</b>		
Cluff Pond #3, Graham County Fairgrounds, Roper Lake, Dankworth Pond, Frye Mesa Lake	These are closed systems, and no SSFS are known from these sites. Cluff Pond #3 is an open pond, but if it were to spill, the runoff would be captured by flood control and canal structures downstream in Ash Creek, making this a closed drainage.	<b>No effects anticipated</b>

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Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Kearny Subcatchment</b>		
Kearny Lake	<p>Fish movement downstream into the Gila River could only occur through a screened siphon pipe, but the water level is maintained below the siphon by the Town of Kearny to minimize water loss. Stocking includes only catchable-sized fish that cannot pass through the screen. Golden algae typically create a fish kill annually. Only young fish could pass through the screen, and no reproduction has been documented since golden algae were identified at this site.</p> <p>SSFS are present in the downstream Gila River as near as a quarter-mile from the lake.</p> <p>Rainbow trout, largemouth bass, channel catfish, redear sunfish, and bluegill are proposed for stocking.</p>	<p>Longfin dace–<b>Low</b>            Sonora sucker–<b>Low</b>            Desert sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement not likely due to structure and management of the lake</li> </ul> <p>Speckled dace–<b>No effects anticipated</b><sup>ii</sup></p>
<b>Agua Fria Subcatchment</b>		
Lynx Lake	<p>Lynx Lake has the potential for fish movement out of the lake into the ephemeral Lynx Creek, then into the Agua Fria River when the stream flows during high-precipitation events. However, Lynx Creek is highly modified to gravel operations, and any flow would travel through mining ponds before reaching the Agua Fria River, and flow conditions would consist of high turbidity and sediment loads. Because of diversions and a sandy gradient that fans out flowing water, Lynx Creek rarely connects to the Agua Fria.</p> <p>SSFS are found in the Agua Fria River in perennial segments of the otherwise ephemeral river in downstream tributaries, and longfin dace and desert suckers are found in mainstem habitats. Speckled dace are historically found at the confluence of Lynx Creek and the Agua Fria River. The nearest longfin dace–occupied area is 14 miles of perennial and interrupted perennial channel downstream. The nearest desert sucker–occupied area is in Ash Creek, a tributary 31 miles downstream through ephemeral, perennial, and interrupted perennial channel. Survey data indicate that SSFS populations are widespread and abundant in perennial habitat, and no stocked species have been detected.</p> <p>Largemouth bass (stocked since 2006), bluegill (stocked since 1992), white crappie, rainbow trout (stocked since 1963), brook trout (stocked since 1964), brown trout (stocked since 1971), cutthroat trout (stocked since 1972), and channel catfish stocked since 2004) are proposed for stocking.</p>	<p>Longfin dace–<b>Low</b>            Speckled dace–<b>Low</b>            Desert sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement to SSFS-occupied areas could be possible; however, the ephemeral connectivity, diversions, and the conditions in the gravel operations below the lakes would limit the ability and number of stocked species reaching the Agua Fria River</li> </ul> <p>Sonora sucker–<b>No effects anticipated</b><sup>ii</sup></p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Fain Lake	<p>Fain Lake has the potential for fish movement out of the lake into the ephemeral Lynx Creek, then into the Agua Fria River. Overflow occurs by water topping the dam and dropping an estimated 60 feet onto bedrock and boulders below.</p> <p>SSFS are found in the Agua Fria River in perennial segments of the otherwise ephemeral river in downstream tributaries, and longfin dace and desert suckers are found in mainstem habitats. Speckled dace are historically found at the confluence of Lynx Creek and the Agua Fria River. The nearest longfin dace are 10 miles downstream, and the nearest desert suckers are in Ash Creek, a tributary joining 27 miles downstream. Survey data indicate that SSFS populations are widespread and abundant in perennial habitat, and no stocked species have been detected.</p> <p>Largemouth bass, bluegill (stocked since 2007), white crappie, rainbow trout (stocked since 1997), brook trout (stocked since 2007), brown trout, cutthroat trout, and channel catfish (stocked since 1997) are proposed for stocking.</p>	<p>Longfin dace–<b>Low</b>            Speckled dace–<b>Low</b>            Desert sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement to SSFS-occupied areas could be possible</li> <li>• The egress from the lake and the ephemeral connectivity, diversions, and the conditions in the gravel operations below the lakes would limit the ability and number of stocked species reaching the Agua Fria River</li> <li>• Movement to other SSFS-occupied areas is presumed to be not possible due to stream conditions and because of survey data indicating these SSFS are abundant in occupied habitat</li> </ul> <p>Sonora sucker–<b>No effects anticipated</b><sup>ii</sup></p>
Horsethief Basin Lake	This lake has a small watershed and relatively large capacity and is presumed not to spill. No SSFS are known from these sites.	<b>No effects anticipated</b>
<b>Lower Gila-Yuma Subcatchment</b>		
Wellton Golf Course, Fortuna Pond, Redondo Lake	No SSFS are known from the subcatchment.	<b>No effects anticipated</b>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>SALT RIVER SUBCATCHMENT (45 sites)</b>		
<b>Black River Complex</b>		
Big Lake, Crescent Lake	<p>These are open lakes that can spill. Big Lake has not spilled since 1993, and Crescent Lake has not spilled in the past 15 years. When these lakes do spill, fish could travel down an unnamed tributary of the North Fork of the East Fork of the Black River. Sonora suckers, desert suckers, and speckled dace are known from the unnamed tributary 3.5 to 4.0 miles downstream of the lakes and farther downstream.</p> <p>Rainbow trout, cutthroat trout, brook trout, and Apache trout are proposed for stocking into Big Lake, and rainbow trout and brook trout are proposed for stocking into Crescent Lake. All of these species have been stocked into both lakes since 1930 to 1940. Brook trout are established in a downstream tributary, Bone Yard Creek, and rainbow/Apache trout hybrids are established in the upper North Fork Black River based on several surveys.</p> <p>Speckled dace and desert suckers are abundant in the North Fork of the East Fork, and Sonora suckers are present but less abundant based on several surveys in 2000 and 2001. Speckled dace are abundant in the unnamed tributary, and Sonora suckers are present but less abundant, based on a survey in 2000. These same surveys did not detect any of the stocked trout species. However, a survey of the unnamed tributary in 1995 captured one rainbow trout that likely came from Big Lake or Crescent Lake.</p>	<p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p>Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species that could move but would only do so rarely due to infrequent spilling</li> <li>• Several surveys of an unnamed tributary and the North Fork and the East Fork of the Black River only detected one stocked trout</li> </ul> <p>Longfin dace–<b>No effects anticipated</b><sup>iii</sup></p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
East Fork Black River	<p>This is an open stream reach, and speckled dace, desert suckers, and Sonora suckers occupy the stocked reach.</p> <p>Apache and rainbow trout are proposed for stocking. Apache trout have been stocked in this reach since 1996, and rainbow trout have been stocked since 1933. Rainbow/Apache trout hybrids are established in the upper North Fork Black River, based on several surveys.</p> <p>Speckled dace are abundant in stocking reach, and desert suckers and Sonora suckers are present but less abundant, based on surveys in 1988, 1996, and 2009. These surveys also have found few stocked trout outside of the stocking reach and no stocked trout that have survived beyond 2 months after stocking.</p>	<p>Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species directly into SSFS-occupied areas</li> <li>• Speckled dace are abundant despite stocking rainbow trout since 1933 and Apache trout since 1996</li> </ul> <p>Desert sucker–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species directly into SSFS-occupied areas</li> <li>• These two species are less abundant</li> </ul> <p>Longfin dace–<b>No effects anticipated</b><sup>ii</sup></p>
West Fork Black River	<p>This is an open stream reach, and speckled dace, desert suckers, and Sonora suckers occupy the reach stocked.</p> <p>Apache trout are proposed for stocking and have been stocked since at least 1995. Records state that “native trout” were stocked beginning in 1938; these were likely Apache trout. Numerous tributary streams maintain recovery populations of Apache trout, but they are not established in the stocking reach.</p> <p>Speckled dace are abundant in stocking reach, and desert suckers and Sonora suckers are present but less abundant, based on surveys in 1988, 1989, and 2002. These surveys also have found few stocked trout downstream of the stocking reach, with only two rainbow trout captured in 1989 (rainbow trout were stocked then) and one Apache trout in 2002.</p>	<p>Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species directly into SSFS-occupied areas</li> <li>• Speckled dace are abundant despite stocking rainbow trout since 1933 and Apache trout since 1996</li> </ul> <p>Desert sucker–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species directly into SSFS-occupied areas</li> <li>• These two species are less abundant</li> </ul> <p>Longfin dace–<b>No effects anticipated</b><sup>ii</sup></p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Ackre Lake	<p>This is an open lake that spills nearly every spring. When the lake is spilling, the upper portion of Fish Creek has continuous flow, and stocked fish can potentially move into Fish Creek and beyond.</p> <p>Arctic grayling and Apache trout are proposed for stocking. Arctic grayling have been stocked since 1987 and Apache trout since 1997. Pure Apache trout and speckled dace were restocked into Fish Creek following renovation in 2004 and 2005 and have persisted since. Sonora suckers and desert suckers are found farther downstream in the Black River (approximately 12 miles downstream of the lake).</p> <p>Only two Arctic grayling have been documented in Fish Creek—one in the late 1980s and one during a recent visual survey. Both were found in the upper portion of Fish Creek, not far from the lake. No grayling have ever been documented in the Black River, the East Fork Black River, or the West Fork Black River, based on several surveys.</p>	<p>Speckled dace—<b>Low</b></p> <p>Desert sucker—<b>Low</b></p> <p>Sonora sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species</li> <li>• Movement to SSFS-occupied areas is possible</li> <li>• Arctic grayling movement only occurs in limited numbers, based on several surveys</li> <li>• Movement of Apache trout is not known, but they are established and coexisting with speckled dace in Fish Creek</li> <li>• Apache trout could move downstream into the Black River, but this would not be in high numbers due to the distance (approximately 12 miles)</li> </ul> <p>Longfin dace—<b>No effects anticipated</b><sup>ii</sup></p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Canyon Creek Complex</b>		
Canyon Creek	<p>This is an open stream reach, and speckled dace and desert suckers occupy the reach. Sonora suckers and longfin dace are found downstream of the stocked reach in the Salt River (approximately 32 perennial miles downstream of the stocking reach), where movement is possible. If fish do move, they would likely only be in low numbers due to the extensive distance. Sonora suckers and longfin dace may be present closer in portions of the Canyon Creek drainage that are on the White Mountain Apache Indian Reservation, but occurrence data are not available.</p> <p>Rainbow and brown trout are proposed for stocking. Rainbow trout have been stocked since 1933, and brown trout have been stocked since 1948. Brown trout successfully reproduce in Canyon Creek. Rainbow trout may also be reproducing and maintaining themselves in low abundance.</p> <p>Speckled dace and desert suckers are abundant in Canyon Creek, based on several surveys. No trout have been detected in the Salt River near the confluence since 1986, despite numerous surveys.</p>	<p>Speckled dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predaceous species into SSFS-occupied habitat</li> <li>• Rainbow trout have been stocked since 1933 and brown trout since 1948</li> <li>• Speckled dace and desert suckers have maintained abundant populations in the reach stocked</li> </ul> <p>Sonora sucker–<b>Low</b></p> <p>Longfin dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predaceous species into SSFS-occupied habitat</li> <li>• Movement is possible but would only be in low numbers due to extensive distance and because of surveys not detecting trout since 1986</li> </ul>
<b>Workman Creek Complex</b>		
Workman Creek	<p>This is an open stream reach, and Sonora suckers, speckled dace, desert suckers, and longfin dace are present downstream (more than 3 miles perennial to longfin dace and more than 5 miles perennial to other SSFS).</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1939. Wild populations of rainbow trout exist in Workman Creek and tributaries (Reynolds Creek), and downstream in Salome Creek.</p>	<p>Longfin dace–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p>Speckled dace–<b>Moderate</b></p> <p>Desert sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species</li> <li>• Movement is probable, and possibly in moderate to high numbers, due to close proximity to SSFS populations</li> <li>• Status of SSFS populations in these areas is not known</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Tonto Creek Complex</b>		
Tonto Creek, Christopher Creek	<p>These are open stream reaches, and longfin dace and desert suckers occupy the reaches. Speckled dace and Sonora suckers are found downstream in middle Tonto Creek downstream of Hell’s Gate, and speckled dace are also found in a downstream tributary of Haigler Creek. Stocked fish movement to the middle Tonto Creek is possible but likely in low numbers, based on several surveys in which only one rainbow trout was detected below Hell’s Gate. Stocked fish movement to speckled dace–occupied areas in Haigler Creek could be in moderate numbers but not likely in high numbers due to the distance (more than 10 miles).</p> <p>Rainbow trout are proposed for stocking and have been stocked into these reaches since 1933. Wild rainbow trout populations persist in upper Tonto Creek and Christopher Creek in the stocked reaches.</p>	<p>Speckled dace–<b>Low</b>            Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species</li> <li>• Movement is possible in moderate numbers to Haigler Creek because of the perennial connection and the distance (more than 10 miles)</li> <li>• Movement to other SSFS-occupied areas would likely be in low numbers based on surveys that have detected only one rainbow trout below Hell’s Gate in the middle Tonto Creek</li> </ul> <p>Longfin dace–<b>Moderate</b>            Desert sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species but directly into SSFS-occupied areas</li> <li>• These SSFS are not abundant or are not adequately surveyed to determine population status</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Haigler Creek	<p>This is an open stream reach, and speckled dace, desert suckers, and longfin dace occupy the reach. Sonora suckers are found downstream of the stocked reach in middle Tonto Creek downstream of Hell’s Gate, where fish movement is possible but likely in low numbers because surveys have only detected one rainbow trout.</p> <p>Rainbow trout are proposed for stocking and have been stocked in this reach since 1933. Wild populations of rainbow trout persist in Haigler Creek and downstream in Tonto Creek.</p>	<p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species</li> <li>• Movement is possible but likely in low numbers, as evident by surveys only detecting one rainbow trout downstream of Hell’s Gate near Sonora sucker–occupied areas</li> </ul> <p>Speckled dace–<b>Moderate</b></p> <p>Desert sucker–<b>Moderate</b></p> <p>Longfin dace–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species directly into SSFS-occupied areas</li> <li>• These SSFS are not abundant or are not adequately surveyed to determine population status</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Lower Salt River Complex</b>		
<p>Apache Lake, Canyon Lake, Saguaro Lake</p>	<p>These are open systems that have spilled in two of the past 20 years. The lakes are a series of reservoirs in the Lower Salt River, with Apache Lake being the farthest upstream, followed by Canyon Lake and Saguaro Lake. Fish movement is possible over the spillways but is unlikely through deep water turbine releases.</p> <p>Speckled dace are known from subcatchment only upstream of Roosevelt Lake (upstream of Apache Lake). From Apache Lake, stocked fish would have to travel upstream through the dam at Roosevelt Lake to reach speckled dace-occupied areas. For fish stocked in Canyon and Saguaro lakes, they would have to travel upstream through additional dams. The water management at these reservoirs includes off-peak power pump-back. Therefore, movement upstream is possible but fish movement to speckled dace areas is highly unlikely because fish moving upstream would have to travel through Roosevelt Lake and continue upstream.</p> <p>Desert suckers, Sonora suckers, and longfin dace are known from downstream in the Lower Salt River and tributaries below Saguaro Lake, the most downstream reservoir of the three. Longfin dace are also known from Fish Creek, a tributary of Canyon Lake, and Cottonwood Creek, a tributary of Saguaro Lake. There is a waterfall on Fish Creek approximately 5 miles upstream from Canyon Lake that is a barrier to upstream fish movement (C. Gill, personal communication).<sup>1</sup> Longfin dace occurrence records are from immediately upstream of this waterfall, so stocked fish would not be able to reach this area. To reach longfin dace in Cottonwood Creek, stocked fish would have to travel upstream through an approximately 2.5-mile ephemeral reach; however, several surveys conducted since 1976 have not detected nonnative species near longfin dace-occupied areas.</p> <p>More and less predacious species are proposed for stocking: walleye, channel catfish, smallmouth bass, largemouth bass, black crappie, and rainbow trout. Channel catfish, smallmouth bass, largemouth bass, and black crappie are established in reservoirs, as are flathead catfish, yellow bass, green sunfish, and yellow bullhead.</p>	<p>Longfin dace–<b>Low</b> Desert sucker–<b>Low</b> Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement of stocked species into SSFS-occupied areas in the Lower Salt River is possible, but based on spill information, movement would be expected to be infrequent</li> <li>• All stocked species are established downstream in the Lower Salt River (largemouth bass, channel catfish, and smallmouth bass) or are not likely to establish, based on habitat and survey information (walleye, rainbow trout, and black crappie)</li> <li>• Stocked species are not likely to reach longfin dace in the two occupied tributaries to these reservoirs, based on ephemeral channel characteristics, the waterfall barrier, and survey data</li> <li>• Longfin from these areas could potentially wash downstream into reservoirs during high-flow events, but individuals that move into these locations would not be able to get back upstream, would no longer be part of a viable population, and are not expected to survive long due to the established robust populations of nonnative predators in the reservoir</li> </ul>

<sup>1</sup> C. Gill, AGFD Fisheries Biologist, personal communication via e-mail to David Boyarski, AGFD Gila River Basin Native Fishes Conservation Coordinator, on February 15, 2011.

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Apache Lake, Canyon Lake, Saguaro Lake (continued)	Largemouth bass, smallmouth bass, and channel catfish are established in the Lower Salt River. Black crappie are not likely to survive in the Lower Salt River because they require lake- or pond-like habitat that is not present downstream of the reservoirs. Rainbow trout are not likely to survive outside the stocking season due to the warm summer water temperatures in the Lower Salt River. Walleye could potentially survive longer but have not been documented to reproduce in these reservoirs or the Lower Salt River. Annual surveys of the Lower Salt River have only documented rare occurrences of walleye.	Speckled dace— <b>Low</b> because movement to speckled dace—occupied areas is highly unlikely due to barriers of upstream dams and reservoirs
Lower Salt River	<p>This is an open river reach with barriers that limit upstream fish movement in Salt River (Stewart Mountain Dam at Saguaro Lake). Stocked trout movement is possible into the Verde River and upstream to Bartlett Dam. Fish movement is also possible downstream into two Salt River Project canals.</p> <p>Longfin dace, desert suckers, and Sonora suckers occupy stocking reach. Speckled dace are known from subcatchment but only in the upper portion of the Verde River near Bartlett Lake. Stocked fish would have to travel through 17 miles of river to reach speckled dace—occupied areas.</p> <p>Rainbow trout are proposed for stocking and are not likely to persist outside the stocking season due to the high summer water temperatures.</p> <p>Largemouth bass, channel catfish, smallmouth bass, flathead catfish, yellow bullhead, and green sunfish are established in the Lower Salt River.</p>	<p>Speckled dace—<b>Low</b></p> <ul style="list-style-type: none"> <li>• Less predacious species are stocked</li> <li>• Stocked trout are not likely to access speckled dace habitat in high numbers because of the distance from the stocking reach</li> </ul> <p>Desert sucker—<b>Moderate</b>            Sonora sucker—<b>Moderate</b>            Longfin dace—<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that are not likely to persist</li> <li>• Stocking directly into SSFS-occupied areas</li> <li>• Population status of these SSFS is not known</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Phoenix Metro Complex</b>		
<p>Chaparral Lake, Papago Ponds, Eldorado Lakes, Indian School Lake, McKellips Lake, Tempe Papago Lake, Tempe Town Lake</p>	<p>These lakes are open systems and are part of the Indian Bend Wash floodway. When they spill, they flow into the Salt River channel at the upper end of Tempe Town Lake, or drain into the Salt River channel immediately below Tempe Town Lake. During flood conditions, stocked fish could move into these two areas. Fish that move into Tempe Town Lake would be prevented from moving upstream by an inflatable dam at the upper end of Tempe Town Lake (there are dams at both ends of the lake). This dam is partially taken down during flood conditions, but the high flows associated with flood conditions would make fish movement upstream at that time unlikely. Fish in Tempe Town Lake and those from systems that flow into the Salt River channel below Tempe Town Lake could move downstream during flood conditions and possibly could travel as far as the Gila River confluence, where there is perennial water. However, SSFS are not known from downstream in the lower Gila River.</p> <p>Desert suckers and Sonora suckers are known from the canals around the Phoenix Metro area as a result of entrainment in, and transport through, the canal system from upstream locations. They may reach many of the urban lakes themselves, based on surveys in 2004, 2006, 2007, 2008, and 2009; however, speckled dace and longfin dace were not found during these surveys. Once in the canal system, the SSFS cannot get back upstream and are hence no longer part of viable populations.</p> <p>More and less predacious species are proposed for stocking: channel catfish, largemouth bass, bluegill, redear sunfish, and rainbow trout.</p> <p>These lakes have various nonnative predators established that are augmented on a regular basis from the canal system.</p>	<p>Desert sucker–<b>Low</b> Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocked fish could affect SSFS, but only if SSFS move into sites from canals or upstream locations</li> <li>• Individuals that move into these locations are no longer part of a viable population of SSFS and are not expected to survive long due to the established robust populations of nonnative predators within the canal system or lakes</li> </ul> <p>Longfin dace–<b>No effects anticipated</b> Speckled dace–<b>No effects anticipated</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Longfin dace and speckled dace are not known from the canal system or these sites, based on surveys of canals</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Phoenix Metro Complex closed systems <sup>iv</sup>	<p>These lakes are closed systems (no outflow). Some are filled via the Salt River Project canal system, and desert suckers and Sonora suckers are known from the canals around the Phoenix Metro area as a result of entrainment in, and transport through, the canal system from upstream locations. Desert suckers and Sonora suckers may reach many of the urban lakes themselves, based on surveys in 2004, 2006, 2007, 2008, and 2009; however, speckled dace and longfin dace were not found during these surveys. Once in the canal system, the SSFS cannot get back upstream and are therefore no longer part of viable populations.</p> <p>More species and less predacious species are proposed for stocking: rainbow trout, channel catfish, bluegill, redear sunfish, and largemouth bass.</p> <p>These lakes have various nonnative predators established. For those systems with inflow from the canal, fish immigrate from the canal system on a regular basis.</p>	<p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocked fish could affect SSFS only if SSFS move into sites from canals or upstream locations</li> <li>• The individuals that move into these locations are no longer part of a viable population of SSFS and are not expected to survive long due to the established robust populations of nonnative predators within the canal system and lakes</li> </ul> <p>Longfin dace–<b>No effects anticipated</b></p> <p>Speckled dace–<b>No effects anticipated</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Longfin dace and speckled dace are not known from the canal system or these sites, based on surveys of canals</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>SANTA CRUZ RIVER SUBCATCHMENT (11 sites)</b>		
<b>Upper Santa Cruz River Complex</b>		
Parker Canyon Lake	<p>The spill history is not known, but engineers estimate that the lake will fill 3 out of every 10 years (though it will not necessarily spill every time). There is potential for fish to move during a spill from Parker Canyon Lake into Parker Canyon. Parker Canyon is perennial for the first mile below the lake, then 10.5 of the next 11 miles are ephemeral to its confluence with the Santa Cruz River in Mexico. Longfin dace were found between the lake and the Mexican border in Parker Canyon in 2004, and longfin dace, Sonora suckers, and desert suckers were found in the mainstem Santa Cruz River in Arizona upstream from the confluence with Parker Canyon during surveys prior to 2000; none was detected in 2003 and 2009. Longfin dace (the only fish present) are known from a tributary spring below Parker Canyon Lake—Neighbor Spring. Speckled dace were also found in Sonoita Creek, a tributary of the Santa Cruz River downstream from the confluence with Parker Canyon in Arizona (after the river turns back north, for a total of 45 miles, 27 miles of which flow through developed agricultural areas in Mexico). It is not known what species occur in the Santa Cruz River in Mexico.</p> <p>Rainbow trout (stocked since 1963), channel catfish (stocked since 1965), redear sunfish, and bluegill are proposed for stocking. Redear sunfish, bluegill, and largemouth bass are found in the lake as a result of illegal stocking. In the perennial habitat immediately below the lake, largemouth bass and bluegill were found in 1997 and largemouth bass and longfin dace in 2004.</p> <p>No stocked species have been collected in the Santa Cruz River in Arizona upstream of Parker Canyon confluence in more than 14 sampling events over the past 22 years.</p>	<p>Longfin dace—<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less</li> <li>• Stocking more predaceous species</li> <li>• Though stocked species, with the exception of bluegill, have not been detected below Parker Canyon Lake, largemouth bass and possibly other nonnatives were found with longfin dace below Parker Canyon Lake dam in 2004, indicating that movement from Parker Canyon is possible</li> </ul> <p>Sonora sucker—<b>Low</b></p> <p>Desert sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less</li> <li>• Stocking more predaceous species</li> <li>• Movement is possible, but stocked species have never been detected during surveys in the Santa Cruz River in Arizona upstream of the Parker Canyon confluence</li> <li>• Bluegills were found during a 1997 survey, but no stocked species were found during a 2004 survey in Parker Canyon downstream of the lake despite stocking rainbow trout and channel catfish in this lake since the 1960s and bluegill and redear sunfish being present in the lake for an unknown time</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Parker Canyon Lake (continued)		Speckled dace— <b>Low</b>  <b>Rationale:</b> <ul style="list-style-type: none"> <li>• Stocking more species</li> <li>• Stocking less predaceous species</li> <li>• Movement to speckled dace—occupied location in Sonoita Creek is not likely to occur due to the extensive distance (more than 45 miles) and stream channel conditions (ephemeral portions and through agricultural lands)</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Peña Blanca Lake	<p>Fish can spill from the reservoir during flood events. The first mile downstream contains pool habitat that is suitable for trout, except in summer months due to the high summer water temperatures. The nearest SSFS locations are in the mainstem of the Santa Cruz River, about 8 ephemeral miles downstream from Peña Blanca Lake via Agua Fria Canyon, portions of which flow through wide sandy bottoms, and an active gravel mine with significantly modified stream reaches.</p> <p>Rainbow trout are proposed for stocking. Rainbow trout may spill out of the lake but have never been detected in the mainstem Santa Cruz River, where the SSFS have been documented based on 11 surveys in 12 years.</p>	<p>Longfin dace–<b>Low</b>            Sonora sucker–<b>Low</b>            Desert sucker–<b>Low</b>            Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species that are not likely to move to occupied SSFS habitat due to the ephemeral nature of the channel and transport conditions</li> <li>• Several surveys have not detected stocked species near SSFS-occupied areas</li> </ul>
Patagonia Lake	<p>Fish can spill from the reservoir during flood events. Five miles of stream below the lake are perennial or interrupted perennial. SSFS were found prior to 2004 within this reach but were not detected in 2004. Longfin dace, speckled dace, Sonora suckers, and desert suckers have been found above the lake in Sonoita Creek and tributaries.</p> <p>Rainbow trout (stocked since 1976) are proposed for stocking. The area below the lake (Sonoita Creek) is not suitable for trout survival in the summer months due to the high temperatures, and at least 12 surveys over the past 20 years have not detected the presence of stocked rainbow trout in this area. However, most surveys were conducted in summer months.</p> <p>The reach immediately upstream of Patagonia Lake contains no suitable habitat for rainbow trout. Only one rainbow trout has been documented above the lake in the early 1990s<sup>2</sup> and no other rainbow trout have been found in later surveys.</p>	<p>Longfin dace–<b>Low</b>            Sonora sucker–<b>Low</b>            Desert sucker–<b>Low</b>            Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predaceous species that could move into SSFS-occupied areas, but habitat is not suitable for survival outside the stocking season due to warm water temperatures</li> <li>• Several surveys have not detected rainbow trout downstream of the lake and have only detected one rainbow trout upstream of the lake</li> </ul>
<b>Middle Santa Cruz River Complex</b>		
Fagen Tank, Sahuarita Lake, Reid Park Lake	These are closed systems, and no SSFS are known from the site.	<b>No effects anticipated</b>

<sup>2</sup> D. Mitchell, AGFD Fisheries Biologist, personal communication via e-mail to David Boyarski, AGFD Gila River Basin Native Fishes Conservation Coordinator, on January 24, 2011.

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Kennedy Park Lake, Silverbell Lake	<p>Fish can spill from the lake during flood events. It is ephemeral for 3.5 miles to a perennial section of the Santa Cruz River. Occurrence of SSFS in the mainstem Santa Cruz River or tributaries that join it in and around Tucson have not been documented. Nearest SSFS are in the Santa Cruz River, more than 40 miles upstream via ephemeral channels.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, black crappie (Silverbell Lake only) and largemouth bass are proposed for stocking. Perennial water in this section of the Santa Cruz is due to wastewater discharge. If stocked fish made it to the perennial water, the poor water quality associated with the treated effluent, irregular flows, and high water temperatures during the summer would prohibit long-term survival.</p>	<p><b>No effects anticipated</b> because known locations of SSFS are upstream, where stocked species are not likely to travel due to the extensive distance of ephemeral streambed.</p>
Rose Canyon Lake	<p>Stocked trout can escape from Rose Canyon Lake when it overflows. The nearest occurrence of SSFS is 13 miles downstream to Rillito Creek, then about 20 miles back upstream into Pantano Wash and Cienega Creek. However, trout would have to survive a 50-foot drop onto a concrete splash pad into Rose Canyon, 4.5 miles to Sycamore Reservoir and another 18-foot drop onto exposed bedrock coming out of Sycamore Reservoir, making it unlikely that trout would survive.</p> <p>Rainbow trout (stocked since 1958) and brown trout (stocked since 1972) are proposed for stocking. No suitable habitat exists in the ephemeral channels connecting Rose Canyon Lake to known locations for the SSFS due to high temperatures and high sediment load following the Aspen fire in 2003.</p>	<p><b>No effects anticipated</b> because known locations of SSFS are upstream, where stocked species are not likely to travel due to the extensive distance of ephemeral streambed.</p>
Lakeside Lake	<p>The lake is subject to overflow events one to two times a year. During an overflow event, the possibility exists for stocked fish or offspring of stocked fish to move over the spillway into the ephemeral washes below.</p> <p>The nearest occurrence of SSFS is in Cienega Creek, which is 14 miles upstream of the ephemeral Pantano Wash near the Del Lago diversion dam, which acts as a barrier to movement farther upstream. No nonnative has been detected in this SSFS-occupied area during three surveys in the past 8 years.</p> <p>Rainbow trout (stocked since 1986), channel catfish (stocked since 1986), bluegill (stocked since 1986), redear sunfish, and largemouth bass (stocked since 1986) are proposed for stocking.</p>	<p><b>No effects anticipated</b> because known locations of SSFS are upstream, where stocked species are not likely to travel due to the distance of ephemeral streambed, and surveys have not detected stocked species</p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Arivaca Lake	<p>Fish can spill from Arivaca Lake after heavy summer rains; this occurred twice in the past 10 years. No SSFS species are documented from the drainage below the lake for more than 60 miles of mostly ephemeral channel.</p> <p>Channel catfish, bluegill, and redear sunfish are proposed for stocking.</p>	<p><b>No effects anticipated</b> because of the extensive distance of ephemeral streambed.</p>
<b>VERDE RIVER SUBCATCHMENT (23 sites)</b>		
<b>Big Chino Wash Complex</b>		
Garret Tank, Shucking Tank, Presley Tank	<p>These are open systems. Garret Tank spilled in 2005 and Shucking and Presley tanks are not known by the AGFD to spill. Speckled dace, longfin dace, desert suckers, and Sonora suckers are found in upper Verde River and in tributaries downstream—more than 50 miles of ephemeral streambed.</p> <p>Channel catfish, black crappie, bluegill, and rainbow trout are proposed for stocking at all sites, and largemouth bass are proposed for stocking at Shucking and Presley tanks. With the exception of channel catfish, these species are not expected to be able survive transport due to the extended length of ephemeral stream channel to reach SSFS-occupied areas and poor water quality conditions during flow events, including low dissolved oxygen and high turbidity. Movement to SSFS-occupied areas is presumed to be not possible for all species except channel catfish. It is not likely that channel catfish could move through these stream systems, but it is possible. If movement occurred, it would be on those rare occasions when they spill, likely in low numbers.</p> <p>Channel catfish are established in the upper Verde River.</p>	<p>Speckled dace—<b>Low</b>                      Longfin dace—<b>Low</b>                      Desert sucker—<b>Low</b>                      Sonora sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement to SSFS-occupied areas is presumed to not be possible due to stream conditions, with the possible exception of channel catfish, which, if moved, would only be on rare occasions and likely in low numbers</li> <li>• This species is established in the upper Verde River and would not establish a new population</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Stone Dam	<p>Spill history is not known. Speckled dace, longfin dace, desert suckers, and Sonora suckers are known from the upper Verde River and tributaries downstream—more than 39 miles of ephemeral streambed.</p> <p>Channel catfish, bluegill, redear sunfish, and largemouth bass are proposed for stocking. With the exception of channel catfish, these species are not expected to be able survive transport due to the extended length of ephemeral stream channel to reach SSFS-occupied areas and poor water quality conditions during flow events, including low dissolved oxygen and high turbidity. Movement to SSFS-occupied areas is presumed to not be possible for all species except channel catfish. It is not likely that channel catfish could move through these stream systems for the reasons above, but it is possible. If movement occurred, it would likely be in low numbers.</p> <p>Channel catfish are established in the upper Verde River.</p>	<p>Speckled dace—<b>Low</b></p> <p>Longfin dace—<b>Low</b></p> <p>Desert sucker—<b>Low</b></p> <p>Sonora sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement to SSFS-occupied areas is presumed to be not possible due to stream conditions, with the exception of channel catfish, which, if moved, would likely be in low numbers</li> <li>• This species is established in the upper Verde River and would not establish a new population.</li> </ul>
Granite Basin Lake	<p>This is an open lake that spilled in 2005 and 2008. If Granite Basin were to spill, fish leaving the lake would fall 30 feet onto bedrock. Longfin dace are known from Mint Wash downstream—approximately 8 miles of interrupted perennial streambed. Speckled dace are known from Walnut Creek—approximately 16 miles of interrupted perennial streambed to Williamson Valley Wash and then approximately 13 miles upstream in a tributary. Additional longfin dace and speckled dace, and desert suckers and Sonora suckers, are found in the upper Verde River downstream—an additional approximately 15 miles from Williamson Valley Wash. Fish movement to most SSFS-occupied areas is not likely due to the extended distance of the ephemeral and interrupted stream channel. The exception is longfin dace—occupied areas, for which movement to these areas is possible.</p> <p>Largemouth bass and bluegill are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p> <p>Largemouth bass have been present in Granite Basin Lake since the 1950s and have not yet become established in downstream Williamson Valley Wash, based on two fish surveys that did not detect this species.</p>	<p>Speckled dace—<b>Low</b></p> <p>Longfin dace—<b>Low</b></p> <p>Desert sucker—<b>Low</b></p> <p>Sonora sucker—<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement not likely due to stream conditions or, in the case of the longfin dace—occupied area, is possible</li> <li>• Habitat in SSFS-occupied areas is likely not suitable for stocked species</li> <li>• Surveys have not detected largemouth bass in downstream perennial Williamson Valley Wash despite this species being present there since the 1950s</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Sycamore Complex</b>		
Elk Tank, JD Dam Lake, White Horse Lake, Middle Tank, Perkins Tank	This is a closed complex, and no SSFS are known from these sites.	<b>No effects anticipated</b>
<b>Middle Verde Complex</b>		
Deadhorse Lake	This is a closed system, and no SSFS are known from this site.	<b>No effects anticipated</b>
Oak Creek	<p>This is an open stream reach, and speckled dace, longfin dace, desert suckers, and Sonora suckers occupy the stocking reach.</p> <p>Rainbow trout (stocked since 1933) are proposed for stocking. Rainbow trout are established in upper Oak Creek, but rainbow trout stocked into lower Oak Creek would not likely persist outside the stocking season due to the high summer water temperatures.</p> <p>Speckled dace are abundant and Sonora suckers and desert suckers persist in upper Oak Creek, based on several surveys. Longfin dace are present only in the downstream end of the stocking reach, presumably because of habitat preference. Population status is unknown due to limited surveys in this area.</p>	<p>Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will not establish new populations</li> <li>• Stocking directly into speckled dace–occupied reach, but survey data suggest speckled dace are abundant despite stocking rainbow trout since 1933</li> </ul> <p>Desert sucker–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p>Longfin dace–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will not establish new populations</li> <li>• Stocking directly into SSFS-occupied reach</li> <li>• SSFS populations are apparently not abundant</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Wet Beaver Creek	<p>Open stream reach and speckled dace, desert suckers, and Sonora suckers occupy the stocking reach. Longfin dace are known from approximately 10 miles downstream (perennial), and movement of stocked fish to this area is probable but likely only in moderate numbers.</p> <p>Rainbow trout proposed for stocking are not likely to persist outside the stocking season due to the high summer water temperatures. During several surveys, the only rainbow trout captured have been stocked fish, indicating that rainbow trout do not reproduce in this stream.</p>	<p>Speckled dace–<b>Moderate</b>  Desert sucker–<b>Moderate</b>  Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will likely not survive outside the stocking season</li> <li>• Stocking directly into occupied area</li> <li>• SSFS populations are apparently not abundant</li> </ul> <p>Longfin dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will likely not survive outside the stocking season</li> <li>• Movement is probable but likely only in moderate numbers due to extended distance</li> </ul>
Mingus Lake	<p>The lake probably spills only during spring due to heavy snowpack, but a specific spill history is not known.</p> <p>Speckled dace, desert suckers, Sonora suckers, and longfin dace are known from Verde River, which is downstream approximately 12 miles. The stream channel between Mingus Lake and the Verde River is steep, rocky, and ephemeral. Fish movement to SSFS-occupied areas not likely due to stream conditions.</p> <p>Rainbow trout, black crappie, and bluegill are proposed for stocking. Black crappie not likely to survive in downstream SSFS-occupied areas because this species requires extensive low-flowing or non-flowing habitat, which is not available in SSFS-occupied areas. Rainbow trout could survive in downstream SSFS-occupied areas but only seasonally due to the high summer temperatures.</p>	<p>Speckled dace–<b>Low</b>  Longfin dace–<b>Low</b>  Desert sucker–<b>Low</b>  Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will likely not move to SSFS-occupied areas due to stream conditions</li> <li>• If they were to move, they would not survive outside the stocking season</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Huffer Lake	<p>This is an open system, and a spill history is not known, but it only spills in response to spring runoff or storm events. Speckled dace, desert suckers, Sonora suckers, and longfin dace are found approximately 30 miles downstream in West Clear Creek. Fish movement to SSFS-occupied areas is possible, but if they did move, it would likely only be in limited numbers due to the extensive distance to SSFS-occupied areas.</p> <p>Rainbow trout are proposed for stocking. Rainbow trout are established in West Clear Creek in the vicinity of the SSFS-occupied area.</p>	<p>Speckled dace–<b>Low</b></p> <p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will not establish new populations</li> <li>• Movement is possible but, if it were to occur, would likely only be in limited numbers due to the extensive distance to SSFS-occupied areas</li> </ul>
West Clear Creek	<p>This is an open stream reach, and speckled dace, desert suckers, Sonora suckers, and longfin dace are known from the stocking reach.</p> <p>Rainbow trout (stocked since 1981) are proposed for stocking. Rainbow trout are established in upper West Clear Creek. Speckled dace, Sonoran suckers, and desert suckers are abundant in upper and middle West Clear Creek (based on several surveys). Longfin dace are present only in the downstream end of the stocking reach and were found in low abundance, presumably because of habitat preference and/or abundance of other nonnative predators, including green sunfish, bullhead, and smallmouth bass.</p>	<p>Speckled dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will not establish new populations</li> <li>• Survey data suggest these SSFS are abundant despite stocking trout since 1981</li> </ul> <p>Longfin dace–<b>Moderate</b> because species is not abundant in the stream and because of stocking into occupied reach</p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Middle Verde River	<p>This is an open stream reach, and longfin dace, desert suckers, and Sonora suckers occupy the stocking reach.</p> <p>Speckled dace are only known from the upstream mainstem and tributaries, including Oak Creek. Barriers (irrigation structures) limit upstream movement within the mainstem Verde River, and various vertical and ephemeral stream stretch barriers prevent or limit movement to occupied areas, except for Oak Creek, where there is a perennial connection with no known barriers (a speckled dace-occupied area is more than 30 miles upstream from the stocking reach). Movement into speckled dace-occupied areas is not likely due to barriers and/or the extensive distance to speckled dace-occupied areas.</p> <p>Rainbow trout proposed for stocking are not likely to persist outside the stocking season due to the high summer water temperatures.</p>	<p>Speckled dace–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement is not likely due to barrier and/or extensive distance to speckled dace-occupied areas</li> <li>• Stocking less predacious species that is not likely to persist due to the high summer water temperatures</li> </ul> <p>Longfin dace–<b>Moderate</b></p> <p>Desert sucker–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking into occupied habitat</li> <li>• Stocking less predacious species that are not likely to persist due to the high summer water temperatures</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Granite Creek Complex</b>		
<p>Goldwater Lake, Watson Lake, Willow Creek Reservoir</p>	<p>These are open systems, and spill history is not known but is presumed to be infrequent. Water topped both Watson and Willow dams during the flood events of December 2004 to January 2005 and flowed all the way to the Verde River. The City of Prescott currently uses these lakes as aquifer recharge, minimizing potential spills. The closest SSFS known are found in lower Granite Creek and the upper Verde River downstream, more than 23 miles of ephemeral streambed. Several sand and gravel mining operations would be barriers and would limit fish movement downstream if a spill occurred.</p> <p>Longfin dace are known from lower Granite Creek and farther downstream in the upper Verde River, and speckled dace, desert suckers, and Sonora suckers are known from the upper Verde River. Movement to SSFS-occupied areas is not likely due to the extensive distance of ephemeral streambed and barriers.</p> <p>Rainbow trout, bluegill, and black crappie are proposed for stocking at all sites, and largemouth bass are proposed for stocking at Goldwater Lake. Black crappie and bluegill are not likely to survive in downstream SSFS-occupied areas because these species require extensive low-flowing or non-flowing habitat, which is not available in SSFS-occupied areas. Rainbow trout could survive in downstream SSFS-occupied areas but only seasonally due to the high summer temperatures. Largemouth bass could survive in the upper Verde River if they were able to move. This species is established near SSFS-occupied areas.</p>	<p>Speckled dace–<b>Low</b>                      Longfin dace–<b>Low</b>                      Desert sucker–<b>Low</b>                      Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more species</li> <li>• Stocking less predacious species that will not likely move to SSFS-occupied areas due to extensive distance and stream conditions</li> <li>• If stocked fish were to move, black crappie and bluegill would not likely survive due to lack of habitat</li> <li>• Rainbow trout would likely only survive seasonally due to the high summer water temperatures</li> <li>• Largemouth bass are established near SSFS-occupied areas</li> </ul>
<b>Lower Verde River Complex</b>		
<p>East Verde River</p>	<p>This is an open stream reach and speckled dace, desert suckers, Sonora suckers, and longfin dace are known from the stocking reach.</p> <p>Rainbow trout are proposed for stocking. Rainbow trout are established in the upper East Verde River. Limited surveys have been conducted of stocking reach, and no recent surveys have been completed. Status of SSFS populations in this reach is not known.</p>	<p>Speckled dace–<b>Moderate</b>                      Longfin dace–<b>Moderate</b>                      Desert sucker–<b>Moderate</b>                      Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species that will not establish a new population</li> <li>• Stocking into SSFS-occupied habitat</li> <li>• The population status of SSFS is not known</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Green Valley Lake	<p>This is an open system. The lake probably spills on an annual basis. Speckled dace, desert suckers, Sonora suckers, and longfin dace are known from the East Verde River downstream, approximately 7 miles (ephemeral). Movement to SSFS-occupied areas is possible.</p> <p>Channel catfish and rainbow trout are proposed for stocking. Rainbow trout could survive in downstream SSFS-occupied areas but only seasonally due to the high summer temperatures. It is unknown whether channel catfish could survive and establish a new population. Currently, channel catfish have not been detected in the middle and upper East Verde River where there are SSFS. Though channel catfish have never been stocked in these lakes by the AGFD, they have established a population in these lakes since at least 2006.</p>	<p>Speckled dace–<b>Moderate</b></p> <p>Longfin dace–<b>Moderate</b></p> <p>Desert sucker–<b>Moderate</b></p> <p>Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Movement into SSFS-occupied habitat is possible</li> <li>• It is not known whether channel catfish could establish a new population</li> </ul>
<b>BILL WILLIAMS RIVER SUBCATCHMENT (14 sites)</b>		
<b>Santa Maria Complex</b>		
Bass Tank, Blue Tank	<p>These are open tanks. Spilling has not been documented by the AGFD at Bass Tank. Blue Tank spilled in 2007.</p> <p>Longfin dace, desert suckers, and Sonora suckers are found in Sycamore Creek, which is downstream more than 7 miles of ephemeral/intermittent stream channel (Loco Creek) that is characterized by a high-gradient, bedrock-dominated stream channel that does not provide adequate habitat for fish. Movement to SSFS-occupied areas is not likely because of stream characteristics.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species. A survey of Loco Creek and Sycamore Creek downstream of the mouth of Loco Creek in 2009 did not detect largemouth bass despite their presence at these tanks since at least 1988. Largemouth bass (two individuals) were detected at the Kirkland/Sycamore confluence in 1999, but origins cannot be determined because there are other possible sources in the watershed.</p>	<p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is not likely due to stream characteristics</li> <li>• The habitat in SSFS-occupied areas is not suitable for stocked species</li> <li>• A recent survey did not detect largemouth bass near SSFS-occupied areas despite existing populations of this species in these tanks since at least 1988</li> </ul> <p>Speckled dace–<b>No effects anticipated<sup>v</sup></b></p>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Granite Mountain 1, Granite Mountain 2	<p>These are open tanks, but spills have not been documented by the AGFD and there are no spillways present.</p> <p>Longfin dace, desert suckers, and Sonora suckers are found in the Santa Maria River, which is downstream more than 9 miles of ephemeral stream channel that is characterized by a high-gradient, bedrock-dominated stream channel that does not provide adequate habitat for fish. Fish movement to SSFS-occupied areas is not likely because of stream characteristics.</p> <p>Bluegill and redear sunfish are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking less predacious species</li> <li>• Movement not likely due to stream characteristics</li> <li>• Habitat in SSFS-occupied is not suitable for stocked species</li> </ul> <p>Speckled dace–<b>No effects anticipated</b><sup>iv</sup></p>
<b>Burro Creek Complex</b>		
Coor’s Lake	This is a closed system with no SSFS located at the site.	<b>No effects anticipated</b>
Carter Tank, Antelope Tank, Harmon Tank 2	<p>These are open tanks, but spills have not been documented by the AGFD and there are no spillways present.</p> <p>Speckled dace, longfin dace, desert suckers, and Sonora suckers are found downstream in Burro, Francis, and Conger creeks. These tanks flow into Pine Creek, where there is a bedrock dam that retains water. From this dam, it is more than 8 miles of intermittent streambed, of which approximately 5 miles is steep, rocky, canyon bound, and prone to flash flooding. During connecting events, the stream would likely have a high sediment load and high velocity that would limit fish survival. Then there is approximately 10 miles of perennial streambed followed by 1–2 miles of intermittent/ephemeral streambed to SSFS-occupied areas. Fish movement is not likely because of stream characteristics.</p> <p>Proposed stocking includes channel catfish at Carter Tank; largemouth bass, channel catfish, bluegill, and redear sunfish at Antelope Tank; and bluegill and redear sunfish at Harmon Tank 2. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for largemouth bass, bluegill, and redear sunfish.</p> <p>Carter Tank was stocked with channel catfish three times throughout the 1970s, and Antelope Tank was stocked with channel catfish four times from 1974 to 2003 and has had largemouth bass present since at least 1998. Multiple surveys of downstream Burro, Francis, and Conger creeks have not detected channel catfish or largemouth bass.</p>	<p>Speckled dace–<b>Low</b></p> <p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement not likely due to a downstream dam that limits movement and due to stream characteristics</li> <li>• Habitat in the SSFS-occupied areas is not suitable for stocked species, except possibly channel catfish</li> <li>• Multiple surveys have not detected channel catfish or largemouth bass in SSFS-occupied areas, despite past stocking history</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Bar 37 Tank	<p>This is an open tank and its spill history is not known, but it has a small watershed and there is not a spillway present.</p> <p>Speckled dace, longfin dace, desert suckers, and Sonora suckers are found downstream in Burro, Francis, and Conger creeks. If it spills, this tank would flow downstream more than 9 miles of intermittent streambed, of which approximately 5 miles is steep rocky, canyon-bound, and prone to flash flooding. During connecting events, the stream would likely have a high sediment load and high velocity that would limit fish survival. The water would then flow approximately 10 miles of perennial streambed followed by 1–2 miles of intermittent/ephemeral streambed to reach SSFS-occupied areas. Fish movement is not likely because of stream characteristics.</p> <p>Channel catfish are proposed for stocking. Bar 37 Tank was stocked with channel catfish in 2003, and surveys in 2004, 2004, 2007, and 2009 of various reaches in downstream Burro, Francis, and Conger creeks did not detect channel catfish.</p>	<p>Speckled dace–<b>Low</b></p> <p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is not likely due to downstream stream characteristics</li> <li>• Multiple surveys have not detected channel catfish in SSFS-occupied areas despite past stocking history</li> </ul>
Little Antelope Tank	<p>This is an open tank that spilled in 2004. When it does spill, it flows into another stock tank and then approximately 6.5 miles of ephemeral/intermittent streambed to areas occupied by speckled dace, desert suckers, Sonora suckers, and longfin dace. Stream channel conditions during flood events (steep rocky canyon, high sediment load, and high velocity) likely limit survival of any stocked fish during transport. Fish movement is possible and, if it occurred, would likely only be few in number because of stream characteristics.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p> <p>Surveys of SSFS-occupied areas in 1998 and 2004 (post-spill) did not detect largemouth bass despite largemouth bass being present at this stocking location since at least 1988 and despite stocking additional largemouth bass in 2003 and the tank spilling in 2004.</p>	<p>Speckled dace–<b>Low</b></p> <p>Longfin dace–<b>Low</b></p> <p>Desert sucker–<b>Low</b></p> <p>Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is possible but habitat in SSFS-occupied areas is not suitable for stocked species</li> <li>• Survey data suggest either stocked fish did not move to occupied areas or did not persist when a spill occurred</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Harman Tank	<p>This is an open tank that spilled in 2004. When it spills, it flows down approximately 2.5 miles of ephemeral streambed and more than 15 miles of interrupted perennial streambed to reach areas occupied by longfin dace, desert suckers, and Sonora suckers. Speckled dace are known from farther downstream in Burro Creek. Fish movement to SSFS-occupied areas is possible but would be rare and likely in low numbers due to the extended length of the stream channel to SSFS-occupied areas.</p> <p>Channel catfish are proposed for stocking.</p>	<p>Speckled dace–<b>Moderate</b>            Longfin dace–<b>Moderate</b>            Desert sucker–<b>Moderate</b>            Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is possible but movement would be rare and in low numbers due to stream characteristics</li> <li>• Channel catfish could potentially survive in SSFS-occupied areas that have not been sufficiently surveyed to determine habitat suitability</li> </ul>
Stubb’s Tank	<p>This is an open tank that spilled in 2007 due to dam failure, but otherwise spill is not known by the AGFD. When it does spill, it flows down approximately 2 miles of ephemeral streambed and more than 15 miles of interrupted perennial streambed to reach areas occupied by longfin dace, desert suckers, and Sonora suckers. Speckled dace are known from farther downstream in Burro Creek. Fish movement to SSFS-occupied areas are possible but would be rare and likely in low numbers due to the low spill potential and the extended length of stream channel to SSFS-occupied areas.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p>Speckled dace–<b>Low</b>            Longfin dace–<b>Low</b>            Desert sucker–<b>Low</b>            Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is possible but would be rare and would likely be in low numbers due to stream characteristics</li> <li>• Habitat in SSFS-occupied areas is likely not suitable for stocked species</li> </ul>

**Table L. Analysis of potential impacts to other special status fish species (SSFS) resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
McElhaney Tank	<p>This is an open tank that spilled in 2004. When it does, it flows down approximately 9 miles of streambed (probably intermittent) and more than 15 miles of interrupted perennial streambed to reach areas occupied by longfin dace, desert suckers, and Sonora suckers. Speckled dace are known from farther downstream in Burro Creek. Fish movement to SSFS-occupied areas is possible but would be rare and likely in low numbers due to the extended length of stream channel to SSFS-occupied areas.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by SSFS are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p>Speckled dace–<b>Low</b>                      Longfin dace–<b>Low</b>                      Desert sucker–<b>Low</b>                      Sonora sucker–<b>Low</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is not likely due to stream conditions</li> <li>• Habitat in SSFS-occupied areas is likely not suitable for stocked species</li> </ul>
Swale Tank	<p>This is an open tank that spilled in 2004 and probably in 1993.</p> <p>There is 3.7 miles of ephemeral streambed to areas occupied by speckled dace, desert suckers, Sonora suckers, and longfin dace. Fish movement to SSFS-occupied areas is probable because of the limited distance of stream channel.</p> <p>Channel catfish are proposed for stocking. A survey of the SSFS-occupied stream reach in 1993 (after a spill occurred) after stocking catfish in 1992 did not detect channel catfish.</p>	<p>Speckled dace–<b>Moderate</b>                      Longfin dace–<b>Moderate</b>                      Desert sucker–<b>Moderate</b>                      Sonora sucker–<b>Moderate</b></p> <p><b>Rationale:</b></p> <ul style="list-style-type: none"> <li>• Stocking more predacious species</li> <li>• Movement is probable; however, survey data suggest either fish did not move to SSFS-occupied areas or did not persist when a spill occurred</li> </ul>

<sup>i</sup> For a more detailed description of site characteristics, please refer to the Biological Assessment of the Sport Fish Stocking Program. Information in this column was obtained from the Biological Assessment and/or analysis of the various databases, unless otherwise noted.

<sup>ii</sup> This species is not known to occur in this subcatchment.

<sup>iii</sup> Longfin dace are not known from the upper Black River drainage, and the closest known records are in the middle Salt River downstream more than 100 miles from any of these sites. Stocked species are not anticipated to be able to move to longfin dace-occupied areas. Longfin dace could be present in the middle and lower Black and the White River on the White Mountain Apache Indian Reservation, but occurrence data are not available.

<sup>iv</sup> Sites include Alvord Lake, Cortez Lake, Desert Breeze Lake, Desert West Lake, Encanto Lake, Evelyn Hallman Pond, Kiwanis Lake, Red Mountain Lake, Rio Vista Pond, Riverview Lake, Steele Indian School Pond, Surprise Lake, Veterans Oasis Lake, Water Ranch Lake, Bonsall Park Lake, Discovery District Park Lakes, Freestone Park Lakes, Granada Park Lakes, McQueen Park Lake, Pacana Park Lake, Roadrunner Park Lake, Selleh Park Lake, and Water Treatment Lake.

<sup>v</sup> Speckled dace are not known from the Santa Maria drainage. To reach speckled dace, fish stocked in the Santa Maria drainage would have to go through Alamo and then upstream to the Burro Creek. This would be highly unlikely and, therefore no effects to speckled dace from these sites are anticipated.



## **APPENDIX L**

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### **Analysis of Potential Impacts to Lowland Leopard Frogs**



**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>BILL WILLIAMS RIVER SUBCATCHMENT</b>		
<b>Santa Maria Complex</b>		
Bass Tank, Blue Tank	<p>Lowland leopard frogs (LLFs) are not known from these sites or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>These are open tanks, but spills have not been documented by the Arizona Game and Fish Department (AGFD) at Bass Tank. Blue Tank spilled in 2007. LLFs are known from downstream locations in the Santa Maria River and tributaries. From Blue Tank, it is approximately 7 miles downstream ephemeral/intermittent Loco Creek and then approximately 7.5 miles down intermittent Sycamore Creek, which turns into Santa Maria River at the Kirkland/Sycamore Creek confluence. Bass Tank is approximately 4.5 miles upstream (ephemeral) from Blue Tank. There are other LLF records farther downstream in the Santa Maria River and tributaries.</p> <p>Loco Creek is characterized by a high-gradient, bedrock-dominated stream channel that does not provide adequate habitat for fish. Fish movement through Loco Creek would be during spring runoff events and flash floods that create increased sediment loads, high turbidity, rapid currents, altered habitat conditions, increased stress levels of organisms in transport, altered fish behavior, and mortality, all of which limit the ability of survival during transport.</p> <p>Largemouth bass, redear sunfish, and bluegill are proposed for stocking. A survey of Loco Creek and Sycamore Creek downstream of the mouth of Loco Creek in 2009 did not detect largemouth bass despite their presence at these tanks since at least 1988. Largemouth bass (two individuals) were detected at the Kirkland/Sycamore confluence in 1999, but origins cannot be determined because there are other possible sources in the watershed.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and movement of stocked fish to LLF-occupied areas is not likely due to the distance (more than 14.5 miles) and stream channel characteristics. A recent survey did not detect largemouth bass in downstream Loco and Sycamore creeks despite existing populations of this species in these tanks since at least 1988.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Granite Mountain 1, Granite Mountain 2	<p>LLFs are not known from these sites or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>These are open tanks, but spills have not been documented by the AGFD, and there are no spillways present. LLFs are known downstream, with the closest to Granite Mountain 1 being in Little Ship Wash (approximately 5.5 miles downstream) and the closest to Granite Mountain 2 being in Iron Ship Wash (approximately 6.5 miles downstream). These locations are ephemeral, and stocked species would not be able to survive long-term if they were able to move into LLF-occupied areas. There are also other LLF records from farther downstream in the Santa Maria River and tributaries; these are more than 9 miles downstream in an ephemeral stream channel that is characterized by a high-gradient, bedrock-dominated stream channel that does not provide adequate habitat for fish.</p> <p>Bluegill and redear sunfish are proposed for stocking. Areas occupied by LLFs are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas. Sites are not known to spill. Even if stocked fish did move, they would not survive long in the areas of the nearest LLF records due to the ephemeral nature of the habitat. Stocked fish are not likely to move farther downstream to occupied areas in the Santa Maria due to the distance (more than 9 miles) of ephemeral channel and stream channel characteristics limiting the survival of escaped fish.</p>
<b>Burro Creek Complex</b>		
Coor's Lake	LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. The site is closed to fish movement.	<b>No effects anticipated.</b>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Carter Tank, Antelope Tank, Harmon Tank #2	<p>LLFs are not known from these sites or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>LLFs are known from downstream in Burro Creek and tributaries. Spills at these tanks have not been documented by the AGFD, and there are no spillways present. If tanks were to spill, they would flow into Pine Creek, where there is a bedrock dam that retains water. From this dam, it is more than 8 miles of intermittent streambed to Burro Creek, of which approximately 5 miles is steep, rocky, canyon-bound, and prone to flash flooding. The closest LLFs are approximately 6 miles downstream (perennial) in Burro Creek.</p> <p>Stocking includes channel catfish at Carter Tank; largemouth bass, channel catfish, bluegill, and redear sunfish at Antelope Tank; and bluegill and redear sunfish at Harmon Tank 2. Areas occupied by LLFs are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for largemouth bass, bluegill, and redear sunfish.</p> <p>Carter Tank was stocked with channel catfish three times throughout the 1970s, and Antelope Tank was stocked with channel catfish four times from 1974 to 2003 and has had largemouth bass present since at least 1998. Multiple surveys of downstream Burro, Francis, and Conger creeks have not detected channel catfish or largemouth bass.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move downstream due to the extensive distance, intervening dam, and ephemeral reaches. Surveys have not detected channel catfish or largemouth bass in downstream locations despite past stocking of these two species.</p>
Bar 37 Tank	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>LLFs are known from downstream in Burro Creek and tributaries. Spill history is not known, but the tank has a small watershed and there is not a spillway present. If it spills, this tank would flow downstream more than 9 miles of intermittent streambed to Burro Creek; approximately 5 miles of this is steep, rocky, canyon-bound, and prone to flash flooding. The closest LLFs are approximately 6 miles downstream (perennial) to Burro Creek. During connecting events, the stream would likely have high sediment load and high velocity that would limit fish survival.</p> <p>Channel catfish are proposed for stocking. Bar 37 Tank was stocked with channel catfish in 2003, and surveys in 2004, 2007, and 2009 of various reaches in downstream Burro, Francis, and Conger creeks did not detect channel catfish.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move downstream due to the extensive distance, intervening ephemeral reaches, and transport conditions if connections would occur. Several surveys have not detected channel catfish in downstream locations despite past stocking history.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>1</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Little Antelope Tank	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open tank that spilled in 2004. The closest downstream records of LLFs are in Burro Creek and tributaries. To reach Burro Creek, it is more than 2 miles downstream of an ephemeral stream bed to a stock tank at the confluence of Conger Creek, then approximately 13 miles down Conger Creek, 3 miles of which are perennial. From the confluence of Conger Creek, LLFs are known in Burro Creek approximately 4 miles upstream and more than 11 miles downstream. LLFs are also known from a downstream tributary, Francis Creek, which from the mouth of Conger Creek is approximately 3 miles downstream. LLFs have been recorded approximately 1 mile up Francis Creek.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by LLFs are prone to flash floods and are generally not suitable habitat for stocked species.</p> <p>Surveys of Conger Creek in 1998 and 2004 (post-spill) did not detect largemouth bass despite largemouth bass being present at this stocking location since at least 1988 and despite an additional stocking of largemouth bass in 2003.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move downstream due to the extensive distance and intervening ephemeral reaches. Two surveys have not detected largemouth bass in Conger Creek despite past stocking of this species.</p>
Harman Tank	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open tank that spilled in 2004. The closest known LLF records are from Boulder Creek (approximately 2.5 miles downstream of ephemeral Stubb's Wash to Boulder Creek and approximately 1.5 miles downstream interrupted perennial Boulder Creek).</p> <p>Channel catfish are proposed for stocking. Areas occupied by LLFs are prone to flash floods; are dry during the dry seasons, except for small pools; have extreme summer temperatures; and are generally not suitable habitat for stocked species. However, channel catfish are a hardy species, and it is not known whether they would be able to survive the harsh conditions of Boulder Creek near LLF occurrences. Spot-check surveys in Boulder Creek downstream from this site and two others (Stubb's and McElhane tanks) using nets in pools and backpack electrofishing in 2009 at seven locations failed to detect any of the species stocked in those tanks (Cummings 2009).<sup>1</sup></p>	<p><b>Moderate</b> because LLFs are not present within the 1-, 3-, and 5-mile areas. LLFs are known from downstream approximately 4 miles (ephemeral/interrupted perennial), and fish movement to that location is possible. It is not known whether channel catfish could survive the harsh stream conditions present in Boulder Creek near the LLF-occupied areas (only small intermittent pools during the dry season and extreme summer water temperatures).</p>

<sup>1</sup> Cummings, G. 2009. Spot-check survey results for Boulder Creek in GMU 18b and 17b, April 13 and 14, 2009.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Stubb's Tank	<p>LLFs are not known from this site but are known from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. LLFs are known from downstream approximately 3 miles (mostly ephemeral) in Boulder Creek, and movement of LLFs into this site is possible.</p> <p>This is an open tank that spilled in 2007 due to dam failure but a spill is not otherwise known by the AGFD. The dam was repaired. Stubb's Tank is near the top of a small contributing watershed and is a comparatively large tank.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by LLFs are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p><b>High</b> because LLFs are present approximately 3 miles downstream from the site, and LLFs could move to this stocking site. Stocked fish could move to LLF-occupied areas; however, stocked species are not likely to survive in LLF-occupied areas (only small intermittent pools during the dry season and extreme summer water temperatures).</p>
McElhaney Tank	<p>LLFs are not known from this site but are known from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. LLFs are known from Connell Gulch downstream approximately 4 miles, and it is not known whether this reach is perennial.</p> <p>The tank spilled in 2004.</p> <p>Largemouth bass, bluegill, and redear sunfish are proposed for stocking. Areas occupied by LLFs are prone to flash floods and extreme summer temperatures and are generally not suitable habitat for stocked species.</p>	<p><b>High</b> because LLFs are present approximately 4 miles downstream from site, and LLFs could move to this site. Stocked fish could move to LLF-occupied areas; however, stocked species are not likely to survive in LLF-occupied areas (only small intermittent pools during the dry season and extreme summer water temperatures).</p>
Swale Tank	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open tank that spilled in 2004 and probably in 1993. The closest known LLF records are downstream in Francis Creek (2.7 miles downstream of ephemeral Black Canyon to Francis Creek, then 5 miles to occupied reach) and a tributary (an additional 7 miles upstream from Francis Creek).</p> <p>Channel catfish are proposed for stocking. A survey of downstream Francis Creek in 1993 (after a spill occurred) after stocking catfish in 1992 did not detect channel catfish.</p>	<p><b>Moderate</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, but LLFs are known from downstream approximately 7.7 miles, and movement of stocked fish to that location is possible due to the hardiness of channel catfish. However, movement would be limited due to the limited spilling and distance between the stocking location and LLF-occupied areas.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>UPPER GILA SUBCATCHMENT</b>		
<b>Upper Gila Complex</b>		
Frye Mesa Lake	There are LLFs known from upstream tributaries of the Gila River. However, if Frye Mesa Lake spilled, the water would not reach the Gila River. The water would travel down ephemeral Frye Creek approximately 5 miles before entering a subdivision and golf course built directly in the drainage bottom. Water entering the golf course would likely inundate and spread out, becoming sheet flow rather than a channelized flow. Once water leaves the golf course and developed urban areas, it flows approximately 1.5 miles, where all flow is stopped and contained by a 15- to 20-foot-tall flood control dike built and maintained by Graham County. The flood control dike prevents water from reaching the Gila River.	<b>No effects anticipated</b> because a flood control structure prevents any spilling water from this site from entering the Gila River.
Cluff Pond #3, Dankworth Pond, Roper Lake, Graham County Fairgrounds	Closed systems and LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.	<b>No effects anticipated.</b>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>AGUA FRIA RIVER SUBCATCHMENT</b>		
<b>Agua Fria River Complex</b>		
Fain Lake, Lynx Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. LLFs are known from more than 30 miles (perennial, ephemeral, and interrupted perennial reaches) downstream in the Agua Fria River.</p> <p>These two lakes are open systems that spill periodically in response to precipitation events. Lynx Lake is upstream from Fain Lake, and any spills flow through it. Water diversions exist that bypass Fain Lake via canals and other ponds during normal summer releases. Lynx Creek and the Agua Fria River are ephemeral/intermittent streams flowing seasonally during high-precipitation events. Stocked species have never been documented in the Agua Fria River area of LLF occurrence records. Other LLF occurrence records exist within the subcatchment in the upper reaches of tributaries to the Agua Fria River, where stocked fish would not be expected to be able to access.</p> <p>Species stocked at Fain Lake are largemouth bass, bluegill (since 2007), white crappie, rainbow trout (since 1997), brook trout (since 2007), brown trout, cutthroat trout, and channel catfish (since 1997).</p> <p>Species stocked at Lynx Lake are largemouth bass (since 2006), bluegill (since 1992), white crappie, rainbow trout (since 1963), brook trout (since 1964), brown trout (since 1971), cutthroat trout (since 1972), and channel catfish (since 2004).</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance and intervening ephemeral reaches.
Horsethief Basin Lake	This is a closed system, and LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.	<b>No effects anticipated.</b>
<b>SALT RIVER SUBCATCHMENT</b>		
<b>Black River Complex</b>		
Big Lake, Crescent Lake, East Fork Black River, West Fork Black River, Ackre Lake	The closest known LLF occurrences are downstream in the Salt River, which is more than 120 miles away.	<b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.
<b>Canyon Creek Complex</b>		
Canyon Creek	The nearest known LLF occurrence is more than 50 miles downstream from the stocking site in the mainstem Salt River and in tributaries of the Salt River (Ash Creek, Cherry Creek, and Coon Creek).	<b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>Workman Creek Complex</b>		
Workman Creek	The nearest known occurrence of LLFs is in tributaries that flow into Roosevelt Lake, which is 14 miles from the confluence of Workman Creek and Salome Creek. Stocked fish (rainbow trout) would have to reach the lake and then migrate into these ephemeral tributaries to reach the occupied LLF locations.	<b>No effects anticipated</b> because of intervening Roosevelt Lake between stocking reach and LLF locations.
<b>Tonto Creek Complex</b>		
Tonto Creek, Christopher Creek, and Haigler Creek	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. The nearest LLF occurrence is in the mainstem of Tonto Creek, more than 25 miles downstream from the nearest proposed stocking site (Tonto Creek). The other two sites are farther away. All three creeks are perennial.</p> <p>The species stocked is rainbow trout, which has been stocked since 1933. Several surveys have detected only one rainbow trout in middle Tonto Creek, downstream of Hell’s Gate (LLF occurrences are downstream of Hell’s Gate).</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance. Surveys have not detected rainbow trout in the vicinity of the LLF locations despite past stocking of this species.
<b>Lower Salt River Complex</b>		
Apache Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest known LLF occurrences are in tributaries of Canyon and Saguaro lakes. LLFs are known from approximately 1 mile upstream of Canyon Lake in ephemeral tributaries La Barge Creek and Tortilla Creek. LLFs are also known from approximately 5 miles upstream of Canyon Lake in Fish Creek, which is ephemeral in its first 5 miles above the lake. To reach these areas, fish would have to move over the dam at Apache Lake into Canyon Lake and then upstream to LLF-occupied areas. Apache Lake has spilled two of the last 20 years and has deep water releases for power generation.</p> <p>Walleye, channel catfish, smallmouth bass, largemouth bass, black crappie, and rainbow trout are proposed for stocking.</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the limited spilling and only deepwater releases for power generation. If the stocked fish did move, they would have to travel through the Apache Lake dam and then upstream in the ephemeral streams of Canyon Lake to get to LLF-occupied areas.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Canyon Lake	<p>LLFs are not known from this site but are known from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. LLFs are known from approximately 1 mile upstream in tributaries La Barge Creek and Tortilla Creek. LLFs are also known from approximately 5 miles upstream in Fish Creek.</p> <p>Walleye, channel catfish, smallmouth bass, largemouth bass, black crappie, and rainbow trout are proposed for stocking. Channel catfish, smallmouth bass, largemouth bass, and black crappie are established in reservoirs, as are flathead catfish, yellow bass, green sunfish, and yellow bullhead.</p> <p>Surveys in 2005 and 2006 found fathead minnow and Gila topminnow in Tortilla Creek near LLF locations but no other fish. Fish Creek was surveyed in 1993 and 1996, and the only reported fish species was longfin dace. It is not known whether any fish are present in La Barge Creek because of the lack of survey information.</p> <p>Walleye, black crappie, and rainbow trout would not be able to survive near LLF-occupied areas because these areas are prone to flash floods, have dry to interrupted habitat, and have high summer water temperatures. It is likely that channel catfish, largemouth bass, and smallmouth bass would not survive, but survival is possible.</p>	<p><b>Moderate</b> because LLFs are present only 1 mile from the stocking location, and stocked species could move into LLF-occupied areas. However, habitat near LLF-occupied areas is not suitable for walleye, rainbow trout, or black crappie. Surveys in two of the areas have not detected largemouth bass, smallmouth bass, or channel catfish despite these species being present in the reservoirs since at least 1950.</p> <p>LLFs could also move down into the reservoir, but those frogs would not be considered a viable population due to the existing predator community present at Canyon Lake that would soon eliminate any migrating frogs.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Saguaro Lake	<p>LLFs are not known from this site but are known from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. LLFs are known from approximately 2.5 miles upstream in Cottonwood Creek.</p> <p>LLF records are also known from approximately 4 miles downstream in the Salt River. Saguaro Lake has spilled two of the past 20 years and has deep water releases for power generation. Fish movement is possible over the spillways but is unlikely through deep water turbine releases.</p> <p>To reach LLFs in Cottonwood Creek, stocked fish would have to travel upstream through an approximately 2.5-mile ephemeral reach; however, several surveys conducted since 1976 have not detected nonnative species near the closest occupied area in Cottonwood Creek.</p> <p>Walleye, channel catfish, smallmouth bass, largemouth bass, black crappie, and rainbow trout are proposed for stocking. Channel catfish, smallmouth bass, largemouth bass, and black crappie are established in reservoirs, as are flathead catfish, yellow bass, green sunfish, and yellow bullhead.</p> <p>Largemouth bass, smallmouth bass, and channel catfish are established in the Lower Salt River. Black crappie are not likely to survive in the Lower Salt River because they require lake- or pond-like habitat that is not present downstream of the reservoirs. Rainbow trout are not likely to survive beyond seasonally due to the warm summer water temperatures in the Lower Salt River. Walleye could potentially survive longer but have not been documented to reproduce in these reservoirs or the Lower Salt River. Annual surveys of the Lower Salt River have only documented rare occurrences of walleye.</p>	<p><b>Low</b> because movement of stocked species into LLF-occupied areas in the Lower Salt River is possible but is based on spill information. Movement would be expected to be infrequent. All stocked species are either established downstream in the Lower Salt River (largemouth bass, channel catfish, and smallmouth bass) or not likely to establish based on habitat and survey information (walleye, rainbow trout, and black crappie).</p> <p>Stocked species do not likely reach LLF-occupied areas in Cottonwood Creek, based on several surveys not detecting nonnative fish.</p> <p>LLFs present in Cottonwood Creek could move downstream into the lake, but those frogs would not be considered a viable population due to the existing predator community present at Saguaro Lake that would soon eliminate any migrating frogs.</p>
Lower Salt River	<p>There is an occurrence record for LLFs from 1991 within the stocked river reach, at Blue Point Picnic Area. LLFs are not known from other areas within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. Based on the occurrence of a single record, it is unlikely that the complement of nonnatives would allow establishment or persistence of LLFs at this site.</p> <p>Rainbow trout proposed for stocking are not likely to persist beyond seasonally due to the high summer water temperatures.</p> <p>Largemouth bass, channel catfish, smallmouth bass, flathead catfish, yellow bullhead, and green sunfish are established in the Lower Salt River.</p>	<p><b>Low</b> because LLFs were detected within the stocking reach but were detected only one time and likely do not persist in this nonnative fish-dominated stream.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>1</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>Phoenix Metro Complex</b>		
31 locations <sup>2</sup>	There are no LLF occurrences within 5 miles of any of the Salt River subcatchment lakes. Twenty-four of the lakes are closed systems from which stocked fish cannot escape. The remaining lakes drain into Tempe Town Lake or the Lower Salt River below Tempe Town Lake via Indian Bend Wash. Movement of stocked fish is limited to downstream only from Tempe Town Lake and then downstream only toward the Gila River, where no LLFs are known to occur.	<b>No effects anticipated.</b>
<b>VERDE RIVER SUBCATCHMENT</b>		
<b>Big Chino Complex</b>		
Garret Tank, Presley Tank, Shucking Tank, Stone Dam	The closest known LLF occurrence to any site within the subcatchment is more than 50 miles downstream and back upstream to the headwaters of Walnut Creek, a tributary of Big Chino Wash that is ephemeral at its confluence.	<b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.
Granite Basin Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open lake that spilled in 2005 and 2008. The nearest LLF occurrence is in the headwaters of Hitt Wash. It is about 16 miles downstream of Mint Wash to the confluence with Hitt Wash, then about 11 miles upstream in Hitt Wash to the occurrence. Hitt Wash is believed to be an ephemeral channel.</p> <p>Largemouth bass and bluegill are proposed for stocking. Between the stocking site and the LLF occurrence area, where Hitt Wash and Mint Wash join Williamson Valley Wash, is a perennial area of Williamson Valley Wash. Largemouth bass have been present in Granite Basin Lake since the 1950s and were not detected in this perennial habitat during four surveys conducted between 1990 and 2003.</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance. Multiple surveys have not detected stocked species in downstream perennial areas.
<b>Granite Creek Complex</b>		
Willow Creek Reservoir, Watson Lake, Goldwater Lake	The nearest LLF occurrence from the lakes is 43 miles downstream from the confluence of Granite Creek with the Verde River. There are more than 23 miles of ephemeral and intermittent stream channels between these sites and the Upper Verde River, which contains several water diversion structures and sand and gravel operations that may inhibit water and fish movement.	<b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas and the intervening water diversion structures.

<sup>2</sup> Alvord Lake, Cortez Lake, Desert Breeze Lake, Desert West Lake, Encanto Lake, Evelyn Hallman Pond, Kiwanis Lake, Red Mountain Lake, Rio Vista Pond, Riverview Lake, Steele Indian School Pond, Surprise Lake, Veterans Oasis Lake, Water Ranch Lake, Bonsall Park Lake, Crossroads Park, Discovery District Park Lakes, Freestone Park Lakes, Granada Park Lakes, McQueen Park Lake, Pacana Park Lake, Roadrunner Park Lake, Selleh Park Lake, Water Treatment Lake, Chaparral Lake, Papago Ponds, Eldorado Lakes, Indian School Lake, McKellips Lake, Tempe Papago Lake, and Tempe Town Lake

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>Sycamore Creek Complex</b>		
Elk Tank, JD Dam Lake, White Horse Lake, Middle Tank, Perkins Tank	Closed systems and LLFs are not known from these sites or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.	<b>No effects anticipated.</b>
<b>Middle Verde River Complex</b>		
Deadhorse Lake	Closed system and LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.	<b>No effects anticipated.</b>
Oak Creek	<p>LLFs are known from the stocking reach and from 1.75 miles up Spring Creek, a tributary that joins Oak Creek 3.7 miles downstream from the end of the stocking reach.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1933. Rainbow trout are established in upper Oak Creek, and stocked trout could persist in this reach. However, rainbow trout stocked into lower Oak Creek would not likely persist beyond seasonally due to the high summer water temperatures.</p> <p>Smallmouth bass, channel catfish, brown trout, green sunfish, red shiner, carp, rock bass, flathead catfish, and bullhead catfish are all known from the stocking reach downstream of Grasshopper Point. Brown trout are established upstream of Grasshopper Point. LLF-occupied areas are near Grasshopper Point and upstream of Grasshopper Point in Oak Creek.</p>	<b>High</b> because LLFs are present in the stocking reach, and stocked fish could persist through the summer in the upper end of the stocking reach. There is a robust community of nonnative fish in Oak Creek that could prey upon LLFs before rainbow trout would have a chance to do so.
Wet Beaver Creek	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest known LLF occurrence is more than 16 ephemeral miles downstream to the Verde River and then an additional 11 miles to the occupied site.</p> <p>Stocked rainbow trout are not likely to persist beyond seasonally due to the high summer water temperatures.</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance and inability to persist during summer.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Mingus Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. The nearest known LLF occurrence is downstream approximately 12 miles to the Verde River, and then an additional 10 miles upstream of the Verde River to the occupied tributaries. The stream channel between Mingus Lake and the Verde River is steep, rocky, and ephemeral. Fish movement to LLF-occupied areas is not likely due to stream conditions.</p> <p>Rainbow trout, black crappie, and bluegill are proposed for stocking. Black crappie are not likely to survive in downstream Verde River because this species requires extensive low-flowing or non-flowing habitat, which is not available. Rainbow trout could survive in the Verde River but only seasonally due to the high summer temperatures. Bluegill could persist in this portion of the Verde River and maintain an existing population, though not in abundant numbers.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance and stream channel conditions.</p>
Huffer Lake	<p>This stocking site is in the headwaters of West Clear Creek and is approximately 54 miles to the known LLF location.</p>	<p><b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.</p>
West Clear Creek	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open stream system, and the closest location is in the Verde River, approximately 4 miles downstream of West Clear Creek to the confluence with the Verde River, and then approximately 4 miles downstream.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1981. Rainbow trout are established in upper West Clear Creek.</p>	<p><b>Moderate</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, but LLFs are known from approximately 8 miles downstream. Movement to that location is possible due to the perennial connection and the open stream system.</p>
Middle Verde River	<p>LLFs are not known from this stocking reach but are known from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas. This is an open stream system, and the closest location is in Bitter Creek, less than 3 ephemeral miles from the stocking reach. Stocked fish would not likely move into the wetland habitat occupied by the LLFs, but LLFs could move into the stocked reach.</p> <p>LLFs are also known from the Verde River downstream of the stocking reach by approximately 9 miles and approximately 13 miles upstream of the stocking reach in Spring Creek (a tributary of Oak Creek).</p> <p>Rainbow trout proposed for stocking are not likely to persist beyond seasonally due to the high summer water temperatures.</p>	<p><b>Moderate</b> because LLFs are present less than 3 miles from the stocking reach in an area connected by an ephemeral stream channel, and LLFs could move to this stocking reach; however, stocked fish are not likely to persist throughout the summer.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>Lower Verde Complex</b>		
Green Valley Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>This is an open system. The nearest documented LLF occurrence is in Rock Creek, a tributary of the East Verde River. The occurrence is 4.6 miles down ephemeral American Gulch and then more than 10 miles down the perennial or interrupted perennial East Verde River, then up into Rock Creek approximately 0.5 mile. There are also occurrences in the East Verde River, approximately 11 miles upstream from the confluence with American Gulch.</p> <p>Other distant occurrences in the subcatchment are in Verde River tributaries upstream and downstream of the confluence with the East Verde River; the Verde River is more than 20 miles downstream from the confluence of American Gulch and the East Verde River.</p> <p>Channel catfish and rainbow trout are proposed for stocking. Rainbow trout could survive in the downstream East Verde River but only seasonally due to the high summer temperatures. It is unknown whether channel catfish could survive and establish a new population. Currently, channel catfish have not been detected in the middle and upper East Verde River. Though channel catfish have never been stocked in these lakes by the AGFD, they have established a population in these lakes since at least 2006. Channel catfish are established in the Verde River.</p>	<p><b>Moderate</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the extensive distance and stream channel conditions. However, it is not known whether channel catfish could establish a new population in the East Verde River.</p>
East Verde River	<p>LLFs are known from within an open stocking reach and immediately downstream.</p> <p>Rainbow trout are proposed for stocking. Rainbow trout are established in the upper East Verde River, and stocked rainbow trout could persist throughout the summer.</p> <p>Yellow bullhead, goldfish, red shiner, green sunfish, and smallmouth bass are all known from the stocking reach and are in the vicinity of the LLF-occupied area in the East Verde River.</p>	<p><b>High</b> because stocking takes place directly into the occupied reach, and stocked fish could persist through the summer. However, there is a robust community of nonnative fish that could prey upon LLFs before rainbow trout have a chance to do so.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
<b>SANTA CRUZ RIVER SUBCATCHMENT</b>		
<b>Upper Santa Cruz River Complex</b>		
Parker Canyon Lake	The nearest known LLF occurrence downstream from Parker Canyon Lake is in a tributary of the Santa Cruz River more than 70 stream miles away.	<b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.
Patagonia Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest LLF occurrence is in a tributary that joins Sonoita Creek about 4.5 miles upstream of the lake, and then an additional 9 miles up that ephemeral canyon. There are also locations downstream, in a tributary of the Santa Cruz River. From Patagonia Lake, it is approximately 8 miles downstream to the Santa Cruz and then approximately 10 mile downstream to the tributary, then approximately 3 miles upstream of the tributary to get to the LLF-occupied areas.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1976. The area below the lake (Sonoita Creek) is not suitable for trout survival in the summer months due to the high temperatures, and at least 12 surveys over the past 20 years have not detected the presence of rainbow trout in this area, though most surveys were conducted in summer months.</p> <p>The reach immediately upstream of Patagonia Lake contains no suitable habitat for rainbow trout. Only one rainbow trout has been documented above the lake in the early 1990s,<sup>3</sup> and no other rainbow trout have been found in later surveys.</p>	<b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the distance (more than 13.5 miles to upstream locations and more than 21 miles to downstream locations). Several surveys have not detected rainbow trout downstream of the lake and have detected only one rainbow trout upstream of the lake.

<sup>3</sup> D. Mitchell, AGFD Fisheries Biologist, personal communication via e-mail to David Boyarski, AGFD Gila River Basin Native Fishes Conservation Coordinator, on January 24, 2011.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Peña Blanca Lake	<p>There are numerous documented occurrences of LLFs within 5 miles of the lake, all of which are upstream. Some are within 1 mile overland from the lake; many others are within 3 miles along intermittent or interrupted perennial channels. LLFs were documented at the lake in 2009.</p> <p>This site was recently drained for a contaminant-removal project. This caused the elimination of the existing nonnative warmwater fish community, including sport fish, some of which will be restocked as part of this restoration project (U.S. Department of Agriculture Forest Service [FS] Biological Assessment [BA]). The AGFD and the FS, along with partners, took advantage of this situation and removed bullfrogs from this site and nearby tanks and may have eliminated this key stressor from this site and nearby areas.</p> <p>It is not known whether LLFs will establish at this site because chytrid fungus is present and may persist even in the absence of bullfrogs and this site will be restocked with some species of warmwater sport fish (separate from this action). Prior to draining and renovation, the shore areas of Peña Blanca Lake had abundant emergent vegetation, submergent vegetation, and underwater cover in the form of downed and standing trees, and it is expected that the vegetation will return after filling.<sup>4</sup> In the absence of bullfrog (an important stressor to LLFs), this complex habitat may allow for the persistence and establishment of LLFs at this site and coexistence with nonnative warmwater fish.</p> <p>Rainbow trout are proposed for stocking. It is unlikely that stocked hatchery fish could move upstream due to the presence of a small fish barrier created by Arizona State Route 289, which crosses Peña Blanca Canyon just above the lake and creates a fish barrier with a 3- to 4-foot drop. Fish can spill from the reservoir during flood events. The first mile downstream contains pool habitat that is suitable for trout, except in summer months when it gets too warm. Rainbow trout are stocked during the cooler months and do not survive through the summer because the lake becomes too warm.</p>	<p><b>Moderate</b> because LLFs are known from within 1 mile of the lake and from the lake. However, it is not known whether LLFs will establish or have begun establishing at this lake. The shore areas of the lake are expected to reestablish with emergent and submergent aquatic vegetation and to have complex habit which, in the absence of bullfrogs, may enable successful persistence of LLFs with nonnative warmwater fish.</p> <p>These complex shoreline areas would also likely limit rainbow trout predation on LLFs (mainly tadpoles).</p> <p>Stocked trout do not survive through the summer and, therefore, there is potential overlap with larval frogs only during the cooler months. Predation by the stocked rainbow trout will be less than predation from the reestablished warmwater sport fish.</p>
<b>Upper and Middle Santa Cruz River Complex</b>		
Fagen Tank, Sahuarita Lake, Reid Park Lake	Closed systems and LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.	<b>No effects anticipated.</b>

<sup>4</sup> D. Mitchell, AGFD Fisheries Biologist, personal communication via e-mail to David Boyarski, AGFD Gila River Basin Native Fishes Conservation Coordinator, on January 24, 2011.

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Kennedy Park Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest LLF occurrence is in the Santa Cruz River. From this site, it is approximately 3.5 miles of ephemeral stream channel to the Santa Cruz River and then approximately 5 miles of ephemeral stream channel up to the occupied area.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, and largemouth bass are proposed for stocking. Precipitation events that fill the lake to overflowing are infrequent, occurring on average at 3- to 7-year intervals. During an overflow event, stocked fish or offspring of stocked fish could potentially move over the spillway into the ephemeral washes below. Any fish caught in these episodic flooding events would be subjected to a variety of environmental and physical stressors, including turbulence, high sediment loads, drop structures, physical damage, clogged gills, and disorientation. The only persistent aquatic habitat available is approximately 10 miles downstream on the Santa Cruz River, below the Roger Road wastewater treatment discharge site. Perennial water in this section of the Santa Cruz River is due to wastewater discharge. If stocked fish made it to the perennial water, the poor water quality associated with the treated effluent, irregular flows, and high water temperatures during the summer would prohibit long-term survival.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the distance (approximately 8.5 miles) and the ephemeral nature of stream channels.</p>
Silverbell Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest LLF occurrence is in the Santa Cruz River, about 12 miles upstream of the confluence of the wash, coming from Silverbell Lake.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, black crappie, and largemouth bass are proposed for stocking. The water level of the lake is controlled by pumping and has the potential to spill only in the case of accidental overpumping, which would be rare. If the lake spilled, it would flow into the Santa Cruz River, which is perennial near this site. Perennial water in this section of the Santa Cruz River is due to wastewater discharge. If stocked fish made it to the perennial water, the poor water quality associated with the treated effluent, irregular flows, and high water temperatures during the summer would prohibit long-term survival.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the low spill potential and the distance (approximately 12 miles) to LLFs.</p>

**Table M. Analysis of potential impacts to lowland leopard frogs resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Magnitude of Potential Effects and Summary of Determining Factors
Rose Canyon Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest LLF occurrence is downstream in Tanque Verde Wash. From the stocking site, it is approximately 4.5 miles downstream to Bear Canyon, then approximately 5 miles downstream to Sabino Canyon, then approximately 3 miles downstream to Tanque Verde Wash. The occupied area is approximately 3.5 miles upstream from the confluence of Sabino Canyon and the Tanque Verde Wash. All these stream segments are ephemeral.</p> <p>Rainbow and brown trout are proposed for stocking.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the distance (approximately 16 miles) to LLFs and the ephemeral nature of stream channels.</p>
Lakeside Lake	<p>LLFs are not known from this site or from within the 1-, 3-, and 5-mile (overland, ephemeral, perennial) areas.</p> <p>The nearest occurrences of LLFs are in Tanque Verde Wash. From the stocking site, it is approximately 7 miles down Pantano Wash and then about 7 miles back upstream in Tanque Verde Wash. There is no perennial habitat in these ephemeral channels. There are also records in another downstream tributary of Tanque Verde Wash.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, and largemouth bass are proposed for stocking.</p>	<p><b>Low</b> because LLFs are not present within the 1-, 3-, and 5-mile areas, and stocked fish are not likely to move to LLF-occupied areas due to the distance (approximately 14 miles) to LLFs and the ephemeral nature of stream channels.</p>
Arivaca Lake	<p>There are no known LLF occurrences in the watershed flowing into Arivaca Lake. The nearest occurrence is more than 40 miles downstream via Arivaca Wash and Brawley Wash near Three Points.</p>	<p><b>No effects anticipated</b> because of the extreme distance to LLF-occupied areas.</p>

<sup>i</sup> For a more detailed description of site characteristics, please refer to the Biological Assessment of the Sport Fish Stocking Program. Information in this column was obtained from the Biological Assessment and/or analysis of the various databases, unless otherwise noted.

**APPENDIX M**

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**Analysis of Potential Impacts to Western Narrow-mouthed Toads**



**Table N. Analysis of potential impacts to Western narrow-mouthed toads resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Exposure Potential
<b>SANTA CRUZ RIVER SUBCATCHMENT</b>		
<b>Upper Santa Cruz River Complex</b>		
Parker Canyon Lake	The nearest known Western narrow-mouthed toad occurrence is downstream from Parker Canyon Lake in a tributary of the Santa Cruz River more than 60 stream miles away.	<b>No effects anticipated</b> because of extreme distance to Western narrow-mouthed toad-occupied areas.
Patagonia Lake	<p>Fish can spill from the reservoir during flood events. Five miles of stream below the lake is perennial or interrupted perennial.</p> <p>The nearest known Western narrow-mouthed toad occurrences are downstream in the Santa Cruz River and in a tributary of the Santa Cruz River. From Patagonia Lake, it is approximately 8 miles downstream to the Santa Cruz River. From there, it is approximately 10 miles downstream to the mainstem areas occupied by the Western narrow-mouthed toad and approximately 8 miles up a small tributary to other areas occupied by the Western narrow-mouthed toad.</p> <p>Rainbow trout are proposed for stocking and have been stocked since 1976. The area below the lake (Sonoita Creek) is not suitable for trout survival in the summer months due to the high temperatures. At least 12 surveys over the past 20 years have not detected the presence of rainbow trout in this area, though most surveys were conducted in the summer months.</p>	<b>Low exposure</b> because of the long distance between the stocking location and Western narrow-mouthed toad occurrences. Also, several surveys have not detected rainbow trout downstream of the lake despite the lake having been stocked since 1976.
Peña Blanca Lake	<p>There are numerous documented occurrences of Western narrow-mouthed toads, including at this site, upstream, and in adjacent stream systems.</p> <p>Rainbow trout are proposed for stocking. During periods of flooding, it is unlikely that stocked hatchery fish could move upstream due to the presence of a small fish barrier created by Arizona State Route 289 that crosses Peña Blanca Canyon just above the lake and creates a fish barrier with a 3- to 4-foot drop. Fish can spill from the reservoir during flood events. The first mile downstream contains pool habitat that is suitable for trout, except in summer months when it gets too warm.</p>	<b>High exposure</b> because Western narrow-mouthed toads are known from this site and several nearby areas.
<b>Upper and Middle Santa Cruz River Complex</b>		
Fagen Tank	These are closed systems, and the closest known location of Western narrow-mouthed toads is approximately 10 miles away.	<b>No effects anticipated.</b>
Sahuarita Lake, Reid Park Lake	<p>These are closed systems, and Western narrow-mouthed toads are known from approximately 2 miles from Sahuarita Lake and approximately 3.5 miles from Reid Park Lake.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, and largemouth bass are proposed for stocking.</p>	<b>Low exposure</b> because Western narrow-mouthed toads are known from several nearby areas. They potentially could reach this stocking location, but known locations are beyond the known dispersal ability by this species, and sites are closed to fish movement.

**Table N. Analysis of potential impacts to Western narrow-mouthed toads resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Exposure Potential
Kennedy Park Lake	<p>The nearest Western narrow-mouthed toad occurrence is approximately 0.5 mile downstream. Precipitation events that fill the lake to overflowing are infrequent, occurring on average at three- to seven-year intervals. During an overflow event, stocked fish or offspring of stocked fish could potentially move over the spillway into the ephemeral washes below. Stocked fish would not persist in an area occupied by Western narrow-mouthed toads because these areas are ephemeral.</p> <p>The only persistent aquatic habitat available is approximately 10 miles downstream on the Santa Cruz River below the Roger Road wastewater treatment discharge site. Perennial water in this section of the Santa Cruz River is due to wastewater discharge. If stocked fish made it to the perennial water, the poor water quality associated with the treated effluent, irregular flows, and high water temperatures during the summer would prohibit long-term survival.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, and largemouth bass are proposed for stocking.</p>	<p><b>Moderate exposure</b> because Western narrow-mouthed toads are known from 0.5 mile away and from several nearby areas, and they potentially could reach this stocking location.</p>
Silverbell Lake	<p>Western narrow-mouthed toads are known from within 0.2 mile of this stocking location and in upstream tributaries of the Santa Cruz River.</p> <p>Rainbow trout, channel catfish, bluegill, redear sunfish, black crappie, and largemouth bass are proposed for stocking. The water level of the lake is controlled by pumping and has the potential to spill only in the case of accidental overpumping, which would be rare. If the lake spilled, it would flow into the Santa Cruz River, which is perennial near this site. Perennial water in this section of the Santa Cruz River is due to wastewater discharge. If stocked fish made it to the perennial water, the poor water quality associated with the treated effluent, irregular flows, and high water temperatures during the summer would prohibit long-term survival.</p>	<p><b>High exposure</b> because Western narrow-mouthed toads are known from close proximity to this site.</p>
Rose Canyon Lake	<p>The closest known occurrences of Western narrow-mouthed toads are from tributaries of the Santa Cruz River. To reach these locations, it is approximately 22 miles downstream (ephemeral) to the Santa Cruz River and then approximately 2.5 miles upstream from there.</p>	<p><b>No effects anticipated</b> because of the long distance between the stocking location and the Western narrow-mouthed toad-occupied area and because of the ephemeral nature of connecting stream channels.</p>
Lakeside Lake	<p>The closest known occurrences of Western narrow-mouthed toads are from tributaries of the Santa Cruz River. To reach these locations, it is approximately 18 miles downstream (ephemeral) to the Santa Cruz River and then approximately 2.5 miles upstream from there.</p>	<p><b>No effects anticipated</b> because of the long distance between the stocking location and the Western narrow-mouthed toad-occupied area and because of the ephemeral nature of connecting stream channels.</p>

**Table N. Analysis of potential impacts to Western narrow-mouthed toads resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Relevant Site and Subcatchment Characteristics for Determining Potential Effects <sup>i</sup>	Exposure Potential
Arivaca Lake	The closest known occurrences of Western narrow-mouthed toads are approximately 4.5 miles overland in unconnected ephemeral areas. Western narrow-mouthed toads are also known from a nearby tributary. To reach this location, fish would have to travel downstream approximately 13 miles of mostly ephemeral stream channel and then upstream approximately 6 miles of mostly ephemeral stream channel. Arivaca has spilled twice in the past 10 years.	<b>No effects anticipated</b> because of the long distance between the stocking location and the Western narrow-mouthed toad-occupied area and because of the ephemeral nature of connecting stream channels.

<sup>i</sup> For a more detailed description of site characteristics, please refer to the Biological Assessment of the Sport Fish Stocking Program. Information in this column was obtained from the Biological Assessment and/or analysis of the various databases, unless otherwise noted.



## **APPENDIX N**

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### **Analysis of Potential Impacts to California Floaters and White Mountain Water Penny Beetles**



**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>LOWER COLORADO RIVER SUBCATCHMENT<sup>1</sup></b>		
<b>Lower Colorado River Above Lyman Complex</b>		
Pratt Tank, Carnero Lake	These are closed systems, and California floaters and White Mountain water penny beetles are not known from these locations.	<b>No effects anticipated.</b>
Hulsey Lake, Nelson Reservoir	<p>These are open systems. Hulsey Lake fills and spills annually during spring runoff and eventually runs into Nelson Reservoir. Nelson Reservoir spills when there is sufficient snowpack (spilled 5 of the past 10 years). California floaters are known 13 miles downstream (perennial) of Nelson Reservoir in the Lower Colorado River. White Mountain water penny beetles are found approximately 10 miles upstream in the Lower Colorado River.</p> <p>Stocking strategies are in place that limit the movement of stocked fish by stocking catchable-sized rainbow trout only after lake levels have subsided—when just a few inches of water are spilling over the spillway at Hulsey and after spilling has stopped at Nelson Reservoir. Rainbow trout are proposed for stocking and are established in Nutrioso Creek upstream of Nelson Reservoir and in at least one tributary downstream.</p> <p>Annual surveys to detect stocked trout have been completed for 11 years, starting in 1996, and have detected 23 rainbow trout downstream of Nelson Reservoir in Nutrioso Creek.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Low exposures because of the distance between stocking locations and California floater–occupied areas and White Mountain water penny beetles; the management strategy; and the limited number of stocked fish found downstream during 11 years of surveys</p>

<sup>1</sup> In the Lower Colorado River subcatchment, the White Mountain water penny beetle is only known from the upper Lower Colorado River. Fish stocked in White Mountain, Schoen’s, Chevelon Creek, Black Canyon Lake, Clear Creek, Clear Creek Reservoir, Jack’s Canyon, Canyon Diablo, and Walnut Creek complexes cannot reach the upper Lower Colorado River because of the dam at Lyman Lake. Therefore, stocking at all sites in these complexes will not affect the White Mountain water penny beetle.

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Becker Lake	<p>This is an open system that does not spill; however, water is released for irrigation purposes through a 14- to 16-inch-diameter outlet pipe that flows into an open ditch and into the Lower Colorado River. The valve on the pipe is only opened to 1 inch during releases to limit fish escapement, and a gabion fish barrier is present upstream of the site that prevents fish movement upstream.</p> <p>California floaters are known from this site and in the nearby Lower Colorado River. White Mountain water penny beetles are found approximately 10 miles upstream from the point that the outflow enters the Lower Colorado River, in the Lower Colorado River.</p> <p>Rainbow trout, Apache trout, and Arctic grayling are proposed for stocking. Rainbow trout likely do not persist beyond seasonally in the downstream Lower Colorado River, based on two surveys in 1993 and one in 1999 that detected only three rainbow trout in that area despite established populations upstream. This is likely due to the high summer water temperatures. Apache and Arctic grayling have similar temperature requirements and would likely not survive downstream in the Lower Colorado River.</p>	<p>California floaters–<b>High exposure</b> because stocking directly into California floater–occupied site</p> <p>White Mountain water penny beetles–<b>Low exposure</b> because of the limited opportunity to escape the lake due to the 1-inch limited opening on the release valve and because of the distance between stocking locations and White Mountain water penny beetles</p>
Lyman Reservoir	<p>This is an open system. California floaters are known from upstream (more than 15 miles perennial) in the Lower Colorado River (the occurrence previously described near Becker Lake). White Mountain water penny beetles are found approximately 10 miles upstream in the Lower Colorado River.</p> <p>Rainbow trout, which are not likely to survive beyond seasonally in the upstream Lower Colorado River stretch between the reservoir and California floater locations, are proposed for stocking based on two surveys in 1993 and one in 1999 that detected only three rainbow trout in that area despite established populations upstream. This is likely due to the high summer water temperatures.</p>	<p>California floaters–<b>Low exposure</b></p> <p>White Mountain water penny beetles–<b>Low exposure</b></p> <p>Because of the distance between stocking locations and California floater–occupied areas and White Mountain water penny beetles and because of the limited numbers of rainbow trout detected near California floater–occupied areas during three surveys</p>

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>West Fork Lower Colorado River</b>		
White Mountain Reservoir	<p>This is an open system and spills annually during summer irrigation releases into Hall Creek. California floaters are known from downstream in the Lower Colorado River, and White Mountain water penny beetles are known from downstream in a tributary of the Lower Colorado River—South Fork Lower Colorado River.</p> <p>To reach the Lower Colorado River, fish would have to move through several private small impoundments. The total distance includes 2.9 miles of ephemeral streambed immediately below the reservoir and 3.1 miles of perennial streambed in lower Hall Creek. If stocked fish made it to the Lower Colorado River, they would have to travel approximately 12 miles downstream (perennial) to reach California floater-occupied areas and approximately 3.5 miles downstream to reach White Mountain water penny beetle-occupied areas.</p> <p>Rainbow trout are proposed for stocking and are established in the Lower Colorado River near the confluence with Hall Creek.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Because of the intervening impoundments between this and other stocking locations and because of the distance between the stocking location and California floater and White Mountain water penny beetle-occupied areas</p>
Lee Valley Lake, West Fork Lower Colorado River at Sheep’s Crossing, West Fork Lower Colorado River at Greer, Tunnel Reservoir, River Reservoir	<p>These are open systems that all drain into River Reservoir, which spills annually during high water. California floaters are known from downstream Lower Colorado River (approximately 15 miles downstream from River Reservoir) and White Mountain water penny beetles are known from a tributary of the Lower Colorado River, South Fork Lower Colorado River (approximately 6 miles downstream). The beetle occurrence, documented in 1993, is in the vicinity of the South Fork Lower Colorado River Apache trout fish barrier. It is unknown whether current beetle distribution occurs above and/or below the fish barrier. Upstream of the barrier is a recovery population of Apache trout that is also an open system and can contribute trout downstream and into the Lower Colorado River.</p> <p>Rainbow trout, Apache trout, and/or Arctic grayling are proposed for stocking.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Because stocked fish could move during spilling or releases, and because of the distance between stocking locations and California floater and White Mountain water penny beetle-occupied areas limits exposure</p>

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Bunch Reservoir	<p>This is an open system that drains into lower Hall Creek and then into the Lower Colorado River during annual summer irrigation releases. California floaters are known from downstream Lower Colorado River (approximately 15 miles downstream/mostly perennial), and White Mountain water penny beetles are known from a tributary of the Lower Colorado River—South Fork Lower Colorado River (approximately 6 miles downstream).</p> <p>Rainbow trout and Apache trout are proposed for stocking.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Because stocked fish could move during spilling or releases and because of the distance between stocking locations and California floater–occupied areas and White Mountain water penny beetles</p>
Mexican Hay Lake	<p>This is an open system that does not spill. Water can be released for irrigation but currently is not used for irrigation, nor is irrigation planned. If water is released, the stocked fish could move into the South Fork Lower Colorado River and then into the Lower Colorado River.</p> <p>California floaters are known from the Lower Colorado River (more than 15 miles downstream/mostly perennial) and White Mountain water penny beetles are known from South Fork Lower Colorado River (approximately 5 miles downstream).</p> <p>Apache trout are proposed for stocking.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Because the lake does not spill, water is not released, and there are no planned irrigation releases</p>
<b>Upper Lower Colorado River Complex</b>		
Little Ortega, Concho Lake	These are closed systems, and California floaters and White Mountain water penny beetles are not known from the sites.	<b>No effects anticipated</b>
<b>White Mountain Complex</b>		
Sponseller Lake	This is a closed system, and California floaters are not known from the site.	<b>No effects anticipated</b>
Silver Creek, Little Mormon Lake	These are open sites that flow into the Silver Creek drainage, from which California floaters are not known. To reach California floater–occupied areas, fish would have to travel down Silver Creek (more than 9 miles and through White Mountain Reservoir), then into Show Low Creek and back upstream (more than 12 miles, mostly ephemeral, with intervening flood-control dams such as Schoen’s Dam that serve as fish barriers to upstream movement).	<b>No effects anticipated</b> because of the extensive distance and barriers that include ephemeral reaches, reservoirs, and dams
Whipple Lake, Long Lake	These are open sites, but fish movement is only possible between lakes and California floaters are not known from these lakes.	<b>No effects anticipated</b>

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>Schoen's Complex</b>		
Woodland Lake, Mountain Meadow Recreation Complex, Rainbow Lake, Show Low Lake, Show Low Creek	<p>These are open sites with various spill histories that all drain into Show Low Lake, which has spilled five times since 1996. Water is released annually for irrigation purposes.</p> <p>California floaters are known from downstream in Show Low Creek (approximately 9 miles downstream to Fool Hollow Lake and then downstream of Fool Hollow dam). Stocking at these waters includes various combinations of rainbow trout, Apache trout, bluegill, largemouth bass, channel catfish, cutthroat trout, and/or brook trout.</p>	<b>Low exposure</b> because of the limited spilling, the distance between stocking locations and California floaters, and the intervening reservoir that the fish must pass through
Scott's Reservoir	<p>This is an open site that spills annually during winter and spring, and water is also released during summer irrigation.</p> <p>California floaters are known from downstream in Show Low Creek (approximately 9 miles downstream to Fool Hollow Reservoir and then downstream of Fool Hollow dam).</p> <p>Rainbow trout, channel catfish, and bluegill are proposed for stocking.</p>	<b>Low exposure</b> because of the frequent spilling and movement that is limited by distance between stocking locations and California floaters, and because of the intervening reservoir the fish must pass through that is also stocked with these species
Fool Hollow Lake	<p>This is an open site. Show Low Creek flows into Fool Hollow Lake. Fool Hollow Lake spilled five of the last 14 years, but water is not released for irrigation. No fish assemblage data are available between Fool Hollow dam and the location of the California floater occurrence, which is about 2 miles downstream from the dam.</p> <p>Stocking includes rainbow trout, Apache trout, bluegill, channel catfish, cutthroat trout, and brook trout in Fool Hollow Lake only.</p>	<b>Moderate exposure</b> because of the limited spilling, but there is limited distance between California floater-occupied areas and the stocking location
<b>Chevelon Creek Complex</b>		
Long Tom Tank, Willow Springs, Woods Canyon,	<p>It is not known whether Long Tom Tank spills because it has a small ephemeral watershed and no outlet. Willow Springs and Woods Canyon spill annually during spring runoff. These sites are upstream of Chevelon Canyon Lake by more than 9 miles of mostly perennial stream channel. California floaters are known from downstream of Chevelon Canyon Lake by approximately 4 miles.</p> <p>Rainbow trout are proposed for stocking.</p>	<b>Low exposure</b> because of the distance between the stocking locations, the California floaters, and the intervening reservoir the fish must pass through that is also stocked with these species

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Chevelon Canyon Lake	<p>The lake spills most years during spring runoff into Chevelon Creek. California floaters are known from downstream by approximately 4 miles.</p> <p>Rainbow trout (which have been stocked since 1966) and Arctic grayling (which have been stocked three times since 1968) are proposed for stocking. Several surveys have not detected Arctic grayling downstream. Rainbow trout have been detected during several surveys in downstream Chevelon Creek (seven trout from all surveys, but usually not detected).</p>	<p><b>Moderate exposure</b> because of frequent spilling, but surveys detect only low numbers of rainbow trout downstream</p>
<b>Black Canyon Complex</b>		
Black Canyon Lake	<p>The site spills during spring runoff only during years with a heavy snowpack or heavy winter precipitation. The downstream reach is ephemeral for more than 50 miles before it reaches Chevelon Creek. California floaters are known from Chevelon Creek.</p>	<p><b>No effects anticipated</b> because of the extensive distance of ephemeral streambed</p>
<b>Clear Creek Complex</b>		
C.C. Cragin Reservoir	<p>The lake spilled three of the past 10 years. Water is also released continuously through a 2-inch pipe. Water releases and spills go into East Clear Creek, which turns into Clear Creek downstream.</p> <p>California floaters are known from 5 miles downstream of C.C. Cragin Dam in East Clear Creek and 17 miles downstream in Clear Creek.</p> <p>Rainbow trout, which have been stocked since 1965, are proposed for stocking. Several surveys downstream have detected only one stocked rainbow trout (stocked fish were marked), but wild rainbow trout were present in higher numbers.</p>	<p><b>Low exposure</b> because of survey data indicating low movement of stocked fish into areas occupied by California floaters</p>
Knoll Lake	<p>The lake spills during spring runoff into East Leonard Canyon, then into Leonard Canyon, then into East Clear Creek.</p> <p>California floaters are known from about 15 miles downstream in Clear Creek (same occurrence as the more distant one described for C.C. Cragin).</p> <p>Rainbow trout, which have been stocked since 1963, are proposed for stocking. Stocked rainbow trout were not detected downstream during prestocking surveys in 2005 and 2007.<sup>2</sup></p>	<p><b>Low exposure</b> because of annual spilling; movement is limited based on distance (more than 15 miles perennial) and a survey that did not detect any stocked trout downstream in Leonard Canyon</p>

<sup>2</sup> Benedict, C., M. Rinker, and G. Fabian. 2007. Blue Ridge & Knoll Reservoir's Trip Report—2007 Fish Sampling and Creel Season.

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
Bear Canyon Lake	<p>The lake spills annually during spring runoff into mostly ephemeral Bear Canyon for 4.2 miles, then into Willow Creek, then into Clear Creek (a total distance of more than 25 miles downstream to Clear Creek).</p> <p>California floaters are known from downstream in East Clear Creek and Clear Creek.</p> <p>Rainbow trout (which have been stocked since 1984) and Arctic grayling (which have been stocked since 1965). A survey of Bear Canyon in 1997 captured one rainbow trout and no Arctic grayling, and four surveys of Willow Creek from 1991 to 2009 did not detect any rainbow trout or Arctic grayling.</p>	<p><b>Low exposure</b> because of annual spilling; movement is limited based on distance (more than 25 miles ephemeral/ perennial), and several downstream surveys captured only one rainbow trout and no Arctic grayling</p>
<b>Clear Creek Reservoir</b>		
Clear Creek Reservoir	The reservoir is connected annually to the upstream watershed, and California floaters are found approximately 63 miles upstream.	<b>No effects anticipated</b> because of the extensive distance
<b>Jack's Canyon Complex</b>		
Soldiers Annex, Long Lake (Diablo), Soldiers Lake, Tremaine Lake	The lakes are open, but California floaters are not known from the immediate drainage. To reach California floater-occupied areas, stocked fish would have to move over 10 miles of a complex series of ditches and tanks to reach Diablo Canyon, which is ephemeral for 46 miles before entering the Lower Colorado River. Then stocked fish would have to move upstream to Clear Creek or other upstream tributaries, which all have additional associated distances and ephemeral reaches.	<b>No effects anticipated</b> because of the extensive distance of ephemeral streambed and the intervening complex system of ditches
<b>Canyon Diablo Complex</b>		
Kinnikinick Lake, Morton Lake, Mud Lake, Frances Short Pond	All of these sites drain into Canyon Diablo and into the Lower Colorado River, which is 40 miles or more downstream. California floaters are known from upstream Lower Colorado River tributaries, of which the closest (Clear Creek) is an additional 46 miles upstream; most of this is ephemeral or interrupted perennial stream channel.	<b>No effects anticipated</b> because of the extensive distance
Ashurst Lake, Coconino Lake	These sites are in a closed system, and California floaters are not known from this system.	<b>No effects anticipated</b>
<b>Walnut Creek Complex</b>		
Mormon Lodge Pond, Marshall Lake, Upper Lake Mary, Lower Lake Mary	The Walnut Creek Complex is considered a closed system, and California floaters are not known from this system.	<b>No effects anticipated</b>

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
<b>SALT RIVER SUBCATCHMENT<sup>3</sup></b>		
<b>Black River Complex</b>		
Big Lake, Crescent Lake	<p>Open lakes can spill. Big Lake has not spilled since 1993, and Crescent Lake has not spilled in the past 15 years. When these lakes spill, fish could travel down an unnamed tributary to the North Fork of the East Fork of the Black River, from which California floaters are known. The White Mountain water penny beetles are known from further downstream of the East Fork of the Black River and tributaries.</p> <p>Rainbow trout, cutthroat trout, brook trout, and Apache trout are proposed for stocking into Big Lake, and rainbow trout and brook trout into Crescent Lake. All of these species have been stocked into both lakes since 1930 to 1940.</p> <p>Several surveys of the unnamed tributary and the North Fork of the East Fork of the Black River in 2000 and 2001 did not detect any of the stocked trout species. However, a survey of the unnamed tributary in 1995 captured one rainbow trout that likely came from Big Lake or Crescent Lake.</p>	<p>California floaters—<b>Low exposure</b></p> <p>White Mountain water penny beetles—<b>Low exposure</b></p> <p>Because of limited spilling and because several downstream surveys only detected one stocked fish</p>
East Fork Black River	<p>It is an open stream reach, and California floaters and White Mountain water penny beetles occupy the stream reach.</p> <p>Apache and rainbow trout are proposed for stocking. Apache trout have been stocked in this reach since 1996, and rainbow trout since 1933.</p> <p>Surveys in 1988, 1996, and 2009 found few stocked trout outside of the stocking reach and no stocked trout that have survived beyond 2 months after stocking.</p>	<p>California floaters—<b>High exposure</b></p> <p>White Mountain water penny beetles—<b>High exposure</b></p> <p>Because stocking directly into California floater and White Mountain water penny beetle-occupied areas</p>

<sup>3</sup> In the Salt River subcatchment, the California floater and White Mountain water penny beetle are only known from the upper Black River drainage (Black River Complex). Fish stocked in the other complexes in the Salt River subcatchment would not be able to reach the upper Black River due to approximately 100 miles of upstream travel required. Therefore, stocking at all sites in these complexes will not affect the California floater or White Mountain water penny beetle.

**Table O. Analysis of potential impacts to California floaters and White Mountain water penny beetles resulting from the implementation of proposed sport fish stocking within subcatchments where they are known to occur.**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>i</sup>	Magnitude of Potential Effects
West Fork Black River	<p>This is an open stream reach, and California floaters occupy the stream reach approximately 2 miles downstream.</p> <p>Apache trout have been stocked since at least 1995. Records state that “native trout” were stocked beginning in 1938, which were likely Apache trout. Numerous tributary streams maintain recovery populations of Apache trout, but they are not established in the stocking reach.</p> <p>Surveys in 1988, 1989, and 2002 found few stocked trout downstream of the stocking reach, with only two rainbow trout captured in 1989 (rainbow trout were stocked then) and one Apache trout in 2002.</p>	<p>California floaters—<b>Moderate exposure</b> because stocking is in close proximity to California floater-occupied areas, but past surveys have found only a few trout outside of the stocking reach</p> <p>White Mountain water penny beetles—<b>High exposure</b></p> <p>Because stocking directly into White Mountain water penny beetle-occupied areas</p>

<sup>i</sup> For a more detailed description of site characteristics, please refer to the Biological Assessment of the Sport Fish Stocking Program. Information in this column was obtained from the Biological Assessment and/or analysis of the various databases, unless otherwise noted.



## **APPENDIX O**

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### **Analysis of Potential Impacts to Page Springs Caddisflies and Balmorhea Saddle-case Caddisflies**



**Table P. Analysis of potential impacts to Page Springs caddisfly and balmorhea saddle-case caddisfly resulting from the implementation of proposed sport fish stocking in the subcatchment where they are known to occur (Verde River).**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>1</sup>	Magnitude of Potential Effects
<b>VERDE RIVER SUBCATCHMENT</b>		
<b>Big Chino Wash and Granite Creek Complexes</b>		
Garret Tank, Shucking Tank, Presley Tank, Stone Dam, Granite Basin Lake, Goldwater Lake, Watson Lake, Willow Creek Reservoir	These are open systems that are all upstream of the upper Verde River. It is between 23 and 50 miles between these sites and the upper Verde River. The Page Springs caddisfly and balmorhea saddle-case caddisfly are known from Oak Creek, more than 60 miles farther downstream.	<b>No effects anticipated</b> because of the extensive distance to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.
<b>Sycamore Complex</b>		
Elk Tank, JD Dam Lake, White Horse Lake, Middle Tank, Perkins Tank	This is a closed complex, and Page Springs caddisfly and balmorhea saddle-case caddisfly are not known from sites.	<b>No effects anticipated.</b>
<b>Middle Verde Complex</b>		
Deadhorse Lake	This is a closed system, and Page Springs caddisfly and balmorhea saddle-case caddisfly are not known from site.	<b>No effects anticipated.</b>
Oak Creek	This is an open stream reach, and Page Springs caddisfly and balmorhea saddle-case caddisfly occupy the stocking reach.  Rainbow trout are proposed for stocking (which have been stocked since 1933). Rainbow trout are already established in upper Oak Creek, but rainbow trout stocked into lower Oak Creek would not likely persist beyond seasonally due to the high summer water temperatures.	<b>High exposure</b> because of stocking into Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.
Wet Beaver Creek	This is an open stream reach. The Page Springs caddisfly and the balmorhea saddle-case caddisfly are known from Oak Creek (more than 16 miles downstream to the Verde River, then approximately 12 miles upstream of the Verde River, then more than 15 miles up Oak Creek).  Rainbow trout proposed for stocking are not likely to persist beyond seasonally due to the high summer water temperatures. During several surveys, the only rainbow trout captured have been stocked fish, indicating that rainbow trout do not reproduce in Wet Beaver Creek.	<b>No effects anticipated</b> because of the extensive distance to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.
Mingus Lake	The lake probably spills only during spring due to heavy snowpack, but specific spill history is not known.  The Page Springs caddisfly and the balmorhea saddle-case caddisfly are known from Oak Creek, which is downstream approximately 12 miles to the Verde River and then more than 15 miles up to Oak Creek.  Rainbow trout, black crappie, and bluegill are proposed for stocking.	<b>No effects anticipated</b> because of the extensive distance to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.

**Table P. Analysis of potential impacts to Page Springs caddisfly and balmorhea saddle-case caddisfly resulting from the implementation of proposed sport fish stocking in the subcatchment where they are known to occur (Verde River).**

Stocking Location	Explanation of Determining Factors for Potential Effects <sup>1</sup>	Magnitude of Potential Effects
Huffer Lake, West Clear Creek	These are open systems. Huffer Lake is in the upper West Clear Creek drainage. The Page Springs caddisfly and the balmorhea saddle-case caddisfly are known from Oak Creek (Oak Creek enters the Verde River more than 22 miles upstream from the mouth of West Clear Creek).	<b>No effects anticipated</b> because of the extensive distance to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.
Middle Verde River	This is an open stream reach, and Page Springs caddisfly and balmorhea saddle-case caddisfly are known from Oak Creek, which enters the Verde River within this stocking reach. To reach Page Springs caddisfly and balmorhea saddle-case caddisfly, stocked fish would have to travel more than 15 miles up Oak Creek (perennial).  Rainbow trout proposed for stocking are not likely to persist beyond seasonally due to the high summer water temperatures.	<b>Low exposure</b> because of the distance between the stocking location and Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.
<b>Lower Verde River Complex</b>		
East Verde River, Green Valley Lakes	These are open systems that are in the East Verde River drainage. From the mouth of the East Verde River, it is approximately 45 miles upstream to the mouth of Oak Creek, then more than 15 miles up Oak Creek to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.	<b>No effects anticipated</b> because of the extensive distance to Page Springs caddisfly and balmorhea saddle-case caddisfly–occupied areas.

<sup>1</sup> For a more detailed description of site characteristics, please refer to the Biological Assessment of the Sport Fish Stocking Program. Information in this column was obtained from the Biological Assessment and/or analysis of the various databases, unless otherwise noted.

**APPENDIX P**

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**Sport Fish Stocking Conservation and Mitigation Program**



## *Sport Fish Stocking Conservation & Mitigation Program*

### **Program Overview**

For over 40 years, the Department has provided significant management resources for the conservation of nongame wildlife. In 1967, the Department created a full time position for the management of nongame species, the first such state position in the nation. Since 1967 the Department has developed one of the most robust state nongame programs in the nation, with expenditures of several million dollars per year.

The Department recognizes that the ability to continue to provide sport fishing opportunities is closely tied to the continued conservation of native aquatic species. It is upon this foundation, and consistent with its long history of conservation, that the Department intends to offset impacts of the stocking program through implementation of a Conservation and Mitigation Program (Program) that will provide for a total average of \$500,000 per year for the 10 year Program period. This funding will provide a net increase of funding toward conservation for the Program species. The intent of the Program is to not only offset impacts but to further improve the baseline status of species identified by the Endangered Species Act (ESA) and National Environmental Policy Act (NEPA) evaluation processes through directed conservation actions in order to help secure future management opportunities. The Department's budget process is administered by the Arizona Game and Fish Commission.

### **Program Species**

As such, the Program includes activities targeted at both consultation species identified in the draft Biological and Conference Opinion (DBCO) and sensitive aquatic species identified in the draft Environmental Assessment (DEA). Collectively, these are termed the "Program Species." Program Focal Species are those identified by DBCO that are federally listed or candidate species most closely associated with the stocking action (Table 1). Additional Conservation Species (ACS) are the other species evaluated in the DBCO comprised of federally listed or candidate species whose future conservation status can have a direct bearing on future sport fish stocking activities. Mitigation actions are also targeted at sensitive aquatic species identified in the DEA that are most closely associated with the stocking action.

**Table 1. Draft Biological and Conference Opinion Focal Species**

<b>Species</b>	<b>ESA Status</b>
Chiricahua leopard frog	Threatened
Headwater chub	Candidate
Loach minnow	Threatened
Narrow-headed garter snake	Potential Candidate <sup>1</sup>
Northern Mexican garter snake	Candidate
New Mexico meadow jumping mouse	Candidate
Northern leopard frog	12 Month Review in prep
Roundtail chub	Candidate

## Program Approach

The Program employs several approaches or tools that can be used to provide information that can help determine what actions are necessary for the conservation and recovery of species or to directly conserve and recover wildlife. These tools include:

- Population inventory: systematic sampling of areas to assess species presence;
- Population or community monitoring: systematic sampling of populations to determine status and/or trend over time;
- Directed research: activities that focus on specific issues relating to species interactions to define management options for future implementation;
- Address stressors<sup>2</sup>: Identify and assess current and future key stressors to native aquatic wildlife populations that are, or may be, controlling or predominant contributing force driving the population or species declines. Collaborate with stakeholders to address, remove, or mitigate these key stressors;
- Reintroduction and augmentation: reintroduction or augmentation into historical range is a frequently used tool to recover species. Reintroductions are often coupled with construction of exclusion barriers and removal or suppression of nonnative species. Reintroductions and augmentations are implemented consistent with accepted guidelines such as George et al. (2009).
- Information, education, and outreach activities: includes signs, publications, promotions, and marketing activities; and
- Guidelines: assessing, evaluating, and proposing modifications of guidelines or regulations that can protect or minimize threats to native aquatic species.

The fundamental concept of the Program is to provide aquatic community based conservation strategies that will benefit Program species as well as other native species. Community-based conservation actions provide benefits to Program and other native species at the individual, population

<sup>1</sup> Project area species likely to be listed in the near future were evaluated in the BCO.

<sup>2</sup> Implementation of actions on the landscape may result in stressors that affect species or their habitat. Such actions can include land management actions, road construction, or introduction of new species. Examples of stressors are habitat loss or degradation, predation, competition, or direct disturbance of individuals of a species.

and watershed scales, and depending on location, can benefit multiple species at one time. Aquatic habitats available for conservation actions under the Program may be limited, and with a community-based focus, the Program can work to establish functional native aquatic communities in the conservation areas. For example, reintroduction or augmentation actions often include suppression or removal of nonnative species prior to reintroduction of the target species, a benefit to the entire native aquatic community at the introduction site. Reintroduction will include the target species and a contingent of additional appropriate native species in order to establish a functional native aquatic community.

Reduction or removal of stressors on the landscape is a tool that has a range of benefits at both the local and broad scales. Removal of sources of nonnative species from the landscape (e.g. to facilitate introductions or to eliminate a watershed source, etc) minimizes impacts to native species at the site of removal and also minimizes downstream contributions of individuals that help maintain or augment resident nonnative populations.

### **Program Activities**

Two tiers of Program activities have been identified; a set of mandatory conservation/mitigation activities targeted at Focal DBCO species and those ACS species with reasonable and prudent measures (RPMs) or terms and conditions (T&C) identified in the draft biological opinion (Table 2) and sensitive aquatic species identified in the DEA (Table 3). Table 4 contains an additional set of activities targeting Program species that will be implemented depending on funding availability.

Each year the Department will identify Table 2 and 3 activities for implementation that year through the annual work plan process. If funds remain after the Table 2 and 3 activities are funded, activities from Table 4 will be implemented. The average annual program budget will be \$500,000.

**Table 2. Mandatory ESA Conservation Actions.** Note that many Program species, regardless of activity focus as identified in the table, will benefit from both ESA and NEPA actions.

Species	Conservation Measure																
Multiple Species <sup>3</sup>	Within 3 years, the AGFD shall convert to triploid rainbow trout for all AGFD hatchery stockings with the exception of closed systems and urban lakes.																
	<p>The AGFD shall secure existing or establish new conservation populations for Focal Species:</p> <table border="1"> <thead> <tr> <th>Species</th> <th>Number of populations secured or established</th> </tr> </thead> <tbody> <tr> <td>Chiricahua leopard frog</td> <td>3</td> </tr> <tr> <td>Headwater chub</td> <td>3</td> </tr> <tr> <td>Roundtail chub</td> <td>3</td> </tr> <tr> <td>Loach minnow</td> <td>2</td> </tr> <tr> <td>Northern leopard frog</td> <td>2</td> </tr> <tr> <td><sup>4</sup>Northern Mexican gartersnake</td> <td>2</td> </tr> <tr> <td><sup>4</sup>Narrow-headed gartersnake</td> <td>2</td> </tr> </tbody> </table>	Species	Number of populations secured or established	Chiricahua leopard frog	3	Headwater chub	3	Roundtail chub	3	Loach minnow	2	Northern leopard frog	2	<sup>4</sup> Northern Mexican gartersnake	2	<sup>4</sup> Narrow-headed gartersnake	2
	Species	Number of populations secured or established															
	Chiricahua leopard frog	3															
	Headwater chub	3															
	Roundtail chub	3															
Loach minnow	2																
Northern leopard frog	2																
<sup>4</sup> Northern Mexican gartersnake	2																
<sup>4</sup> Narrow-headed gartersnake	2																
The AGFD shall conduct a statewide live bait (bait fish and tiger salamander) use assessment and risk analysis to develop recommendations to amend live bait management. The AGFD shall present these recommendations to the Arizona Game and Fish Commission for implementation consideration.																	
The AGFD shall review and update existing outreach programs addressing use of live bait to ensure they are adequately informing the public about capture, use, and proper discard of live bait species.																	
The AGFD shall review and update existing outreach programs on the risks to native aquatic species from the transport of nonnative aquatic species (sportfish, baitfish, other fish species, amphibians, invertebrates, and plants) to ensure they are adequately informing the public of the harmful nature of such actions, and means they can take to reduce or prevent inadvertent transport of such nonnative species.																	
Apache Trout	The AGFD shall continue to work with partners to evaluate barrier conditions on the three streams, survey for nonnative fish in recovery streams, and repair barriers as part of the proposed action.																

<sup>3</sup> Benefits would result for most aquatic-associated Focal, ACS and other special status species with implementation of these measures. For each measure, some species may benefit directly and some species may benefit indirectly. The magnitude of benefits for each species would also vary.

<sup>4</sup> Dependent upon available repatriation source, numbers, and protocols.

Sport Fish Stocking Conservation & Mitigation Program

<b>Species</b>	<b>Conservation Measure</b>
Chiricahua Leopard Frog	For warm-water sport fish stocking actions via contract vendors at sites where effects to Chiricahua leopard frogs are a concern, the “sensitive areas” HACCP plan shall be followed by AGFD personnel receiving the fish from the vendor. This “sensitive areas” plan shall involve the double-sorting and examination of all fish in the load to reduce the risk of introduction of unwanted aquatic organisms with the sport fish. Loads containing unwanted aquatic organisms shall be refused and not stocked.
	For coldwater sport fish stocking actions at sites where effects to Chiricahua leopard frogs are a concern and trout or grayling are coming from AGFD hatcheries, the HACCP plan for disease and parasite control at the hatchery shall be in place to reduce the risk of contamination of the fish to be stocked.
	The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.
	The AGFD shall visually examine the shoreline and shallow lake margins for the presence of submerged/shoreline vegetation cover for tadpoles at the time rainbow trout are stocked and during any fish surveys conducted post-stocking.
	The AGFD shall work with the Coronado National Forest in management of habitat conditions at Peña Blanca Lake to ensure that submerged/shoreline vegetation cover for tadpoles is maintained at the lake.
Gila Chub	In two years during the 10-year period, the AGFD shall survey the occupied Gila chub habitat on public lands in Spring Creek above the barrier when habitat conditions are conducive to rainbow trout persistence. If any stocked rainbow trout are found, these shall be documented and removed from the stream and an additional survey to locate stocked rainbow trout shall be implemented in the following year.
Headwater Chub	The AGFD shall implement actions to increase angler awareness of headwater chub, including the fact that headwater chub is not a legal sport fish at the East Verde River and Haigler Creek stocking sites.
	Headwater chub habitats in the East Verde River and Tonto Creek shall be considered priority areas for use of triploid rainbow trout to avoid augmentations to existing wild populations.

Sport Fish Stocking Conservation & Mitigation Program

<b>Species</b>	<b>Conservation Measure</b>
	<p>In order to obtain information needed to implement conservation actions, the AGFD shall undertake an assessment of headwater chub populations in the East Verde River, Tonto Creek, and the Haigler Creek drainage to determine population structure and extent, nonnative species present as stressors, sites for potential reestablishment, and identification of specific research needs. This assessment shall tier off the Arizona Statewide Conservation Agreement and Strategy (AGFD 2006) for headwater chub and five other native fish species, because that document contains considerable information on the conservation needs and a strategy to address those needs. The assessment shall serve as a guidance document for implementing conservation actions for the headwater chub.</p>
<p>Roundtail Chub</p>	<p>The AGFD shall, within the first two years of the program, develop an assessment of opportunities across the range of the roundtail chub focusing on those with the greatest potential for conservation benefits for the species. This assessment shall tier off the Arizona Statewide Conservation Agreement and Strategy (AGFD 2006) for roundtail chub and five other native fish species, as that document contains considerable information on the conservation needs and a strategy to address those needs. The assessment shall serve as a guidance document for implementing conservation actions for the roundtail chub.</p>
<p>Spikedace</p>	<p>The AGFD shall continue monitoring of the Upper Verde River to evaluate native and nonnative fish populations. Any individuals of the stocked sport fish species captured during such monitoring shall be removed from the river.</p>
<p>Loach Minnow</p>	<p>In the event of insufficient Apache trout to meet annual recreational stocking demands, the East Fork Black River shall be stocked with Apache trout after those recreational stocking sites associated with a recovery population (i.e., West Fork Black River, West Fork Little Colorado River at Sheeps Crossing, and Lee Valley Lake). Any rainbow trout that are stocked into the East Fork Black River shall be sterile triploids to avoid any augmentation to the reproducing population of rainbow trout in the East Fork Black River.</p> <p>If a spill from Big Lake or Crescent Lake is anticipated, the AGFD shall install a fish weir to capture fish and prevent downstream movement. If the weir is not installed prior to a spill, a survey for nonnative trout species in the occupied habitat of the loach minnow shall be completed within that spring/summer season. All nonnative fish species encountered during that survey shall be removed.</p> <p>In coordination with partners, the AGFD shall develop and implement a standard survey schedule and procedures to evaluate fish community with emphasis on stocked trout presence in the loach minnow occupied areas of the East Fork Black River drainage.</p>

Sport Fish Stocking Conservation & Mitigation Program

<b>Species</b>	<b>Conservation Measure</b>
Northern Leopard Frog	For warm-water sport fish stocking actions via contract vendors at sites where effects to northern leopard frogs are a concern, the “sensitive areas” HACCP plan shall be followed by AGFD personnel receiving the fish from the vendor. This “sensitive areas” plan shall involve the double-sorting and examination of all fish in the load to reduce the risk of introduction of unwanted aquatic organisms with the sport fish. Loads containing unwanted aquatic organisms shall be refused and not stocked.
	For coldwater sport fish stocking actions at sites where effects to northern leopard frogs are a concern and trout or grayling are coming from AGFD hatcheries, the HACCP plan for disease and parasite control at the hatchery shall be in place to reduce the risk of contamination of the fish to be stocked.
Sonoran Tiger Salamander	The AGFD shall work with Federal, state, and private partners to identify and implement projects that reduce the risk of hybridization between Sonoran tiger salamanders and nonnative salamanders.
	The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.
Northern Mexican Gartersnake	The AGFD shall develop outreach material on gartersnakes to attempt to reduce the deliberate killing or injuring of gartersnakes by the public. Materials developed for this program shall be posted at stocking sites that contain populations of gartersnakes.
	In providing for two gartersnake populations either through securing existing but threatened populations or establishment of new conservation populations, a source for individuals to reestablish conservation populations is needed, as well as information on propagation and release options. The Gartersnake Working Group has initiated work in these arenas, and the AGFD shall contribute to these efforts during the 10-year program. Once sufficient information on potential release sites, release progeny, and release methods is obtained, the AGFD shall initiate the reestablishment program.
	As part of all native fish reintroduction efforts in Arizona, the AGFD shall ensure that renovated streams occupied by northern Mexican gartersnakes are quickly restocked with appropriate native fish species and native frog species that can provide prey for Northern Mexican gartersnakes in order to not put stress on any gartersnake population through elimination of its forage base.
Narrow-headed Gartersnake	The AGFD shall develop outreach material on gartersnakes to attempt to reduce the deliberate killing or injuring of gartersnakes by the public. Materials developed for this program shall be posted at stocking sites that contain populations of gartersnakes.

Sport Fish Stocking Conservation & Mitigation Program

<b>Species</b>	<b>Conservation Measure</b>
	<p>In providing for two gartersnake populations either through securing existing but threatened populations or establishment of new conservation populations, a source for individuals to reestablish conservation populations is needed, as well as information on propagation and release options. The Gartersnake Working Group has initiated work in these arenas, and the AGFD shall contribute to these efforts during the 10-year program. Once sufficient information on potential release sites, release progeny, and release methods is obtained, the AGFD shall initiate the reestablishment program.</p> <p>As part of all native fish reintroduction efforts in Arizona, the AGFD shall ensure that renovated streams occupied by narrow-headed gartersnakes are quickly restocked with appropriate native fish species that can provide prey for narrow-headed gartersnakes in order to not put stress on any gartersnake population through elimination of its forage base.</p>
<p>Three Forks Springsnail</p>	<p>The AGFD shall continue to implement the HACCP plan for operations at state hatcheries and the transport of trout to the stocking sites in the Black River drainage.</p>
<p>Mt Graham Red Squirrel</p>	<p>The AGFD shall coordinate with the Coronado National Forest on traffic management that can reduce the risk of mortality to Mount Graham red squirrels from vehicles accessing Riggs Flat Lake as part of continuing implementation of the Mount Graham Red Squirrel Recovery Plan.</p>
<p>Little Colorado Spinedace</p>	<p>The stocking restrictions and implementing actions from the 1995 (FWS 1995) and 2001 (FWS 2001) incidental take statements for C.C. Craigin Reservoir, Knoll Lake, and Nelson Reservoir, except for modified creel survey requirements, are part of the Proposed Action for this consultation and shall be implemented over the next 10 years as described in those documents. Creel surveys shall occur no less than once every 10 years.</p>
<p>Arizona Treefrog Huachuca Distinct Population Segment</p>	<p>The AGFD shall review the existing angler information concerning the restrictions on transport and use of tiger salamanders at Parker Canyon Lake and modify the information as deemed appropriate to increase angler awareness that such transport and use are harmful.</p>
<p>Bonytail Razorback Sucker</p>	<p>A barrier net shall be installed at the La Paz County Park Lagoon immediately prior to the stocking event and remain in place for seven days after the stocking event.</p> <p>Prior to any stocking into La Paz County Park Lagoon, signs similar to those used on Lake Havasu shall be posted at the lagoon describing bonytail to anglers and informing them of what to do should they catch a bonytail. These signs shall remain in place as long as the barrier net is in place at the lagoon.</p>

Species	Conservation Measure
New Mexico Meadow Jumping Mouse	<p>The AGFD shall provide protection from human access impacts, and if needed, enhancement actions for meadow jumping mouse habitats on AGFD-owned lands on the West Fork Black River.</p> <p>The AGFD shall coordinate with the Apache–Sitgreaves National Forests on evaluations of effects to meadow jumping mouse habitat along the East and West Forks of the Little Colorado River.</p>

**Table 3. Mandatory NEPA Mitigation Actions.** Note that many Program species will benefit from both ESA and NEPA activities.

Species	Mitigation Action
Multiple Other Special Status Aquatic and Semi-aquatic Species <sup>5</sup>	<p>The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through the removal of key stressors. The AGFD shall address two stressors impacting these species and associated aquatic communities within each of the following sub-watersheds/catchments:</p> <ul style="list-style-type: none"> <li>• Verde River sub-basin</li> <li>• Salt River sub-basin</li> <li>• Middle Gila sub-basin</li> <li>• Little Colorado River sub-basin</li> <li>• Bill Williams sub-basin</li> </ul> <p>The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through planning using a watershed approach. The AGFD shall apply the its Watershed-based Fish Management Process (AGFD 2009) to develop aquatic species management plans for all priority watersheds in the state. The planning process will include consideration for special status species and identify conservation opportunities for incorporation within the planning framework. Special status species will benefit through identification of focal management areas and restoration needs that can be prioritized into multiple land management programs and funding sources in a coordinated approach.</p>
Piscivorous Riparian or Aquatic Nesting Birds	<p>The AGFD shall develop information tools to educate anglers on the impacts of fishing debris on riparian or aquatic nesting birds. The AGFD shall continue to support the monofilament recovery bin program by replacing old and providing new bins.</p>

<sup>5</sup> Mitigation measures would also benefit ESA Focal and ACS species. For each measure, some species may benefit directly and some species may benefit indirectly. The magnitude of benefits for each species would also vary.

**Table 4. ESA Conservation Commitments that will be implemented contingent upon funding availability; actions are targeted at Additional Conservation Species (ACS) but may also benefit Focal and NEPA sensitive aquatic species.**

<b>Species</b>	<b>Conservation Action</b>
Multiple Species	The AGFD shall reintroduce ACS and sensitive aquatic species alongside Focal species as deemed appropriate during planning.
Arizona Treefrog Huachuca DPS, Northern Leopard Frog, N. Mexican Gartersnake, Narrow-headed Gartersnake, Headwater Chub, Roundtail Chub, Loach Minnow, Chiricahua Leopard Frog, Quitobaquito Pupfish, Desert Pupfish, Sonoran Tiger Salamander, Gila Topminnow, Razorback Sucker, Apache Trout, Southwestern Willow Flycatcher, Little Colorado Spinedace, Page Springs Springsnail, Sonora Chub, Spikedace, Three Forks Spring Snail, Yellow-billed Cuckoo	The AGFD shall continue to work with partners to implement species recovery plans or other recovery/conservation strategies, including monitoring, nonnative species removal efforts, reestablishment of populations within the historical range, monitoring and repair of barriers, or other tools/approaches.
Chiricahua Leopard Frog, Spikedace Loach Minnow, Northern Leopard Frog, Narrow-headed Garter Snake	The AGFD shall share information with, and periodically solicit available information from, the New Mexico Department of Game and Fish to assess if stocking at Luna Lake potentially may have impacts to native fish, leopard frog, and gartersnake populations in the San Francisco River drainage.
Gila Chub	The AGFD shall work with AESO and partners to develop and implement a recovery plan for the Gila chub. As part of that effort, conservation needs for the species relative to nonnative fish species will be identified and included in the plan.
Southwestern Willow Flycatcher	The AGFD shall work with the ASNF to evaluate impacts to physical and biological features of designated critical habitat on the West Fork Little Colorado River from anglers accessing the stocking sites at Greer and Sheeps Crossing.

## Sport Fish Stocking Conservation & Mitigation Program

<b>Species</b>	<b>Conservation Action</b>
Yellow-billed Cuckoo	The AGFD shall work with the Coconino, Prescott, and Tonto National Forests to evaluate impacts to physical habitat features along the occupied habitats on the Verde River from anglers accessing the stocking sites at the middle Verde River, Oak Creek, West Clear Creek, and Wet Beaver Creek.
Little Colorado Spinedace	<p>While implementing the Integrated Fisheries Management Plan for the Little Colorado River (Young et al. 2001) and the East Clear Creek Watershed Recovery Strategy for Little Colorado Spinedace and Other Riparian Species (USDA 1999), in cooperation with other partners, the AGFD shall consider other conservation actions to benefit the species. Such actions may include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Surveys in the Chevelon Creek watershed from the headwaters to Rock Art Ranch to identify nonnative species distribution and determine suitability of habitats for spinedace reintroductions;</li> <li>• Once suitable habitats are identified, plan and implement renovations and reintroductions of spinedace into the Chevelon Creek watershed;</li> <li>• Mechanically remove wild trout from drainages above C.C. Cragin Reservoir and green sunfish from below the reservoir;</li> <li>• Remove wild brown trout and nonnative warmwater fish species from the mainstem Little Colorado River above Lyman Lake;</li> <li>• Repatriate spinedace found in Nelson Reservoir to occupied habitat upstream;</li> <li>• Continue to work with partners to replicate populations, fund habitat improvements, and maintain or improve habitat for spinedace on Wildlife Management areas that support spinedace;</li> </ul>
New Mexico Meadow Jumping Mouse	The AGFD shall explore opportunities to manage for suitable meadow jumping mouse habitats at other AGFD-owned properties in the White Mountains.
Humpback Chub	While implementing the Integrated Fisheries Management Plan for the Little Colorado River (Young et al. 2001), the AGFD shall consider information and recommendations identified in Stone et al. (2007), Hilwig et al. (2009) and Valdez and Thomas (2009) regarding the Little Colorado River drainage above Grand Falls as a possible source of nonnative fish species (particularly channel catfish) into occupied humpback chub habitat in the lower Little Colorado River.

### Planning and Program Implementation

A 10-year planning document will be developed to guide annual work plans for Focus species (Table 1) that identify resourcing as necessary to accomplish objectives. Annual conservation work plans will identify and prioritize species, activities, conservation tools, budget and staffing that will implement conservation objectives, including specific conservation actions or targets identified in Table 2 and 3

Sport Fish Stocking Conservation & Mitigation Program

for Program species. In each year, an annual work plan will be developed by AGFD with input from and coordination with AESO and WSFR. The plan will identify specific actions which will be taken for consultation species in that year. The annual report of the previous year’s activities will be the vehicle to assess progress toward meeting the conservation measures.

Annual work plans will also include additional species and activities based on conservation priority and program budget availabilities (within the \$500,000 average annual Program budget). Annual conservation work plans will identify and prioritize species, activities, conservation tools, budget and staffing that will implement achievable conservation activities, potentially including conservation actions identified in Table 4.

Multiple Other Special Status Aquatic and Semi-aquatic Species	The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through the removal of key stressors. The AGFD shall address two stressors impacting these species and associated aquatic communities within each of the following sub-watersheds/catchments: <ul style="list-style-type: none"> <li>• Verde River sub-basin</li> <li>• Salt River sub-basin</li> <li>• Middle Gila sub-basin</li> <li>• Little Colorado River sub-basin</li> <li>• Bill Williams sub-basin</li> </ul>
	The AGFD shall contribute to the conservation of other special status aquatic and semi-aquatic species through planning using a watershed approach. The AGFD shall apply the its Watershed-based Fish Management Process (AGFD 2009) to develop aquatic species management plans for all priority watersheds in the state. The planning process will include consideration for special status species and identify conservation opportunities for incorporation within the planning framework. Special status species will benefit through identification of focal management areas and restoration needs that can be prioritized into multiple land management programs and funding sources in a coordinated approach.
Piscivorous Riparian or Aquatic Nesting Birds	The AGFD shall develop information tools to educate anglers on the impacts of fishing debris on riparian or aquatic nesting birds. The AGFD shall continue to support the monofilament recovery bin program by replacing old and providing new bins.

**Program Reporting**

The Department will report on the Program progress and implementation annually over the 10-year period. Program reports will be submitted to USFWS WSFR program following existing annual grant reporting schedules and will include any incidental take findings as identified in the Terms and Conditions.

## References

- AGFD. 2006. Arizona Statewide Conservation Agreement for Roundtail Chub (*Gila Robusta*), Headwater Chub (*Gila Nigra*), Flannelmouth Sucker (*Catostomus Latipinnis*), Little Colorado River Sucker (*Catostomus spp.*), Bluehead Sucker (*Catostomus Discobolus*), and Zuni Bluehead Sucker (*Catostomus Discobolus Yarrowi*) AGFD Wildlife Management Division, Nongame Branch, Native Fish Program, Phoenix.
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- FWS. 1995. Biological Opinion of Federal Aid's Transfer of Funds to the Arizona Game and Fish Department for Nonnative Fish Stocking Nelson Reservoir, Blue Ridge Reservoir, and Knoll Lake. Memorandum from Regional Director, Region 2 to Assistant Regional Director, Federal Aid, Region 2, U.S. Fish and Wildlife Service, Albuquerque, dated November 20, 1995.
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