Flood Control District of Maricopa County

WITTMANN AREA DRAINAGE MASTER PLAN

McMICKEN DAM PROJECT BIOLOGY REVIEW MEMORANDUM VOLUME BR

Contract FCD 2004C060

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WITTMANN AREA DRAINAGE MASTER PLAN

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Note: Volume ID will be used for Section, Plate, Figure, and Table Identifiers

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SECTION BR-1: INTRODUCTION

Biological resources are important to consider in the planning process for several reasons. Documenting the habitat types and vegetation communities can indicate the potential for threatened and endangered species and wildlife of concern to occur within the study area. To obtain certain types of environmental permits, avoiding or minimizing impacts to unique and sensitive habitats is essential.

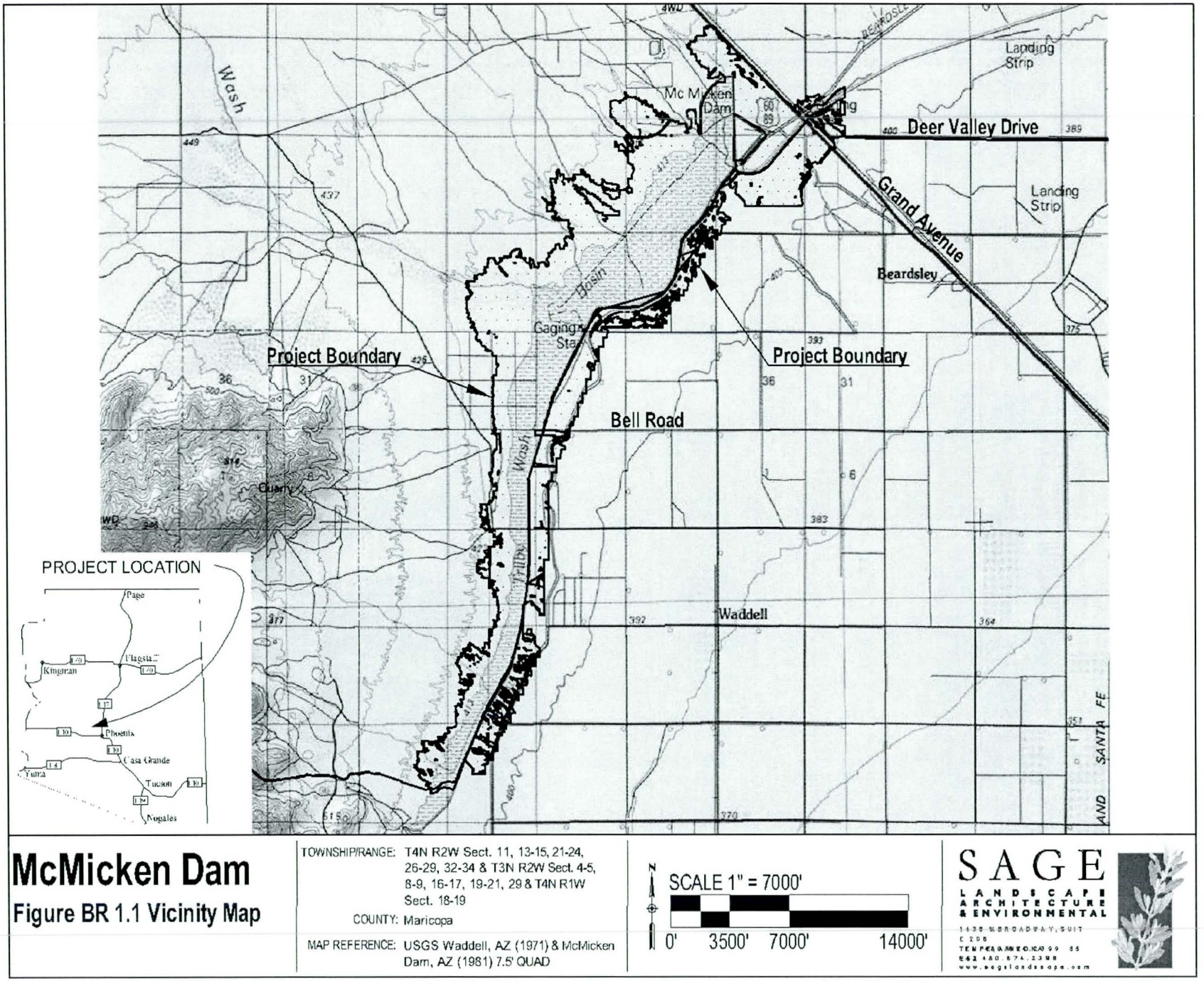
The purpose of this biological review memorandum is to provide resource information for the McMicken Dam project area of the Wittmann Area Drainage Master Plan (ADMP). The information provided in this memorandum will assist the project team in evaluating the biological resources, issues and impacts associated with this project and will be used to evaluate the need for any further biological studies within the McMicken Dam project area. The new dam alternatives upstream of the CAP canal were not included within the original project area; therefore this area was not included in this report and further analysis of the area upstream of the CAP canal will be required, if necessary.

1.1 Location

The McMicken Dam project area is located south of the intersection of Grand Avenue (U.S. Highway 60) and Deer Valley Road in the City of Surprise, Arizona (**Figure BR 1.1**). The project area extends westerly to Trilby wash, then south-southwesterly to what would be the alignment of Peoria Road, and extends to the southwest to include the Beardsley Canal. The McMicken Dam project area identified in Figure BR-1.1 (probable maximum flood area) lies within Sections 11, 13-15, 21-24, 26-29, and 32-34 in Township 4 North, Range 2 West; Sections 4-5, 8-9, 16-17, 19-21, and 29 in Township 3 North, Range 2 West; and Sections 18 and 19 in Township 4 North, Range 1 West, Maricopa County and is within the Waddell Arizona and McMicken Dam 7.5-minute USGS quadrangle maps.

Elevations within the project area range from 1,300 feet above mean sea level (MSL) to 1,400 feet above MSL. The topography is relatively flat with several earth berms of approximately six feet bordering and running through the project area. There are many ephemeral washes that bisect the project area and intersect the McMicken Dam. In addition, dirt roads are located throughout the property and appear to be used for work-related and recreational purposes.

Figure BR 1.1. Vicinity Map



SECTION BR-2: METHODS

The first step in evaluating the biological resources within the McMicken Dam project area was to review existing reports and projects completed within and adjacent to the project area. Information compiled during past projects completed by SAGE was reviewed for information on biological resources. In addition, SAGE reviewed studies and planning documents produced by outside organizations for projects within the McMicken Dam project area and within the Wittmann ADMP. SAGE reviewed the McMicken Dam and Waddell 7.5-minute United States Geological Survey Quadrangle maps of the project area to determine project boundaries, adjacent land uses and assess potential habitat types within the project area. The natural vegetation, observed wildlife, and the sensitive and unique habitats were identified by conducting a reconnaissance survey of the McMicken Dam project area in May 2006. Survey observations and aerial photographs were used to identify the natural vegetative communities and general land use. Finally, the vegetation communities of the project area were assessed, and plant and wildlife species observed in the field were recorded.

3.1 Past SAGE Projects Located Within the Project Boundaries and Vicinity of the McMicken Dam Project Area

3.1.1 White Tanks Flood Retarding Structure #3 North Inlet Channel Biological Overview

Completed in 2005, the objective of this biological overview was to determine whether habitats along Beardsley Wash may support special status species. The project involved the realignment and improvements to approximately two miles of Beardsley Wash located in Section 4, Township 2 North, Range 2 West, and Sections 28 and 33 of Township 3 North, Range 2 West of the Gila and Salt River Base and Meridian, Maricopa County, Arizona. The project site is generally located east and west of Beardsley Canal between Olive and Glendale Avenues.

3.1.2 Access Control & Area Corridor Study for Patton Road and Jomax Road (229th Avenue to Tillman Boulevard) Draft Technical Memorandum No. 4 Environmental Overview

In 2006, SAGE prepared an Environmental Overview for the Patton Road/Jomax Road Corridor Study identifying the ecological, environmental, and cultural resources within the project area. The Patton Road corridor stretches between 299th Avenue and Grand Avenue. The Jomax Road corridor runs from 179th Avenue to 299th Avenue, and is classified as an enhanced arterial in the Maricopa County Department of Transportation, Major Streets and Routes Plan.

3.2 Outside Projects and Studies Completed within the Wittmann ADMP Project Boundaries and in the Vicinity of the McMicken Dam

3.2.1 Wittmann Area Drainage Master Study Update: Existing Conditions Analysis Report Volume EC Part 1: Contract FCD 2002C029. March 2005. Prepared by: Entellus

The Wittmann Area Drainage Master Study Update (ADMSU) was completed to assess drainage problems, identify potential solutions, and set framework for storm-water management in north-central Maricopa County. This study covers approximately 307 square miles bounded by the Hieroglyphic Mountains to the north, White Tank Mountains and McMicken Dam to the south, Agua Fria River to the east, and the Hassayampa River basin to the west. Section EC-5 is the Environmental Overview for the project area and offers useful information for both the ecological and environmental research for the Wittmann project.

3.2.2 Estrella Roadway (Loop 303) Environmental Assessment – Final 2.0

This project is along Loop 303 between Grand Avenue and the intersection of Happy Valley Road and 99th Avenue south of the McMicken Dam outlet channel. This Environmental Assessment, completed in 1997, provides ecological insight into this McMicken Dam biological review.

3.2.3 Wittmann ADMSU Hydrology Report Volume I

This document, completed in 2005 includes detailed hydrological data for the entire ADMSU. It also has a soils map, watershed map, and land use map that could be very useful for the environmental and ecological sections of our study.

3.2.4 Flood Control District of Maricopa County Comprehensive Plan 2005

This document is the comprehensive plan for the entire county. Completed in 2005, it has split the county into four regions: Northwest, Southwest, Northeast, and Southeast. The Wittmann project falls within the Northwest region. A section is provided for each region and includes a description of the topography, vegetation, hazard characteristics, and socioeconomic characteristics. This document is useful for both the ecological and environmental portions of the projects.

4.1 Residential Development

The McMicken Dam project area has dense residential development along the periphery of the project boundaries and scattered, low density residential areas within the project area. Much of the general vicinity of the project site is highly disturbed due to residential construction activities and vehicle use. The type and number of wildlife species in a residential development depend on the intensity of the human activity and the type of vegetation present. Intact native vegetation within low density residential communities support many of the same wildlife species supported by the Sonoran Desert subdivisions (Entellus 2005).

4.2 Constructed Water Features

The Beardsley Canal and McMicken Dam are the only constructed water features within the McMicken dam project area. The Beardsley Canal closely parallels the McMicken Dam from the principal outlet channel south to Trilby Wash where the canal separates from the dam and continues to the south. The Maricopa Water District operates Beardsley Canal and it is used to supply water to members of the District for irrigation (ADWR 2006).

4.3 Vegetation Communities

4.3.1 Ecotone between the Lower Colorado River Valley and Arizona Upland Subdivisions

The McMicken Dam project area is generally regarded as a Lower Colorado River Valley Subdivision trending to Arizona Upland Subdivision (Brown 1994), with altitudinal (ecotone) variations in plant community compositions. The Lower Colorado River Subdivision is the largest and most arid subdivision of the Sonoran Desert and includes trees such as blue paloverde (*Cercidium floridum*), ironwood (*Olneya tesota*), mesquites (*Prosopis* spp.), and catclaw acacia (*Acacia greggii*) (Brown 1994).

Plant communities of the interfluvial flats of the project area are generally dominated by creosote bush (*Larrea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), and brittlebush (*Encelia farinosa*). The desert floor in desert scrub communities often contains several grass species that typically include Arizona cotton top (*Trichacne californica*), curly mesquite grass (*Hilaria belangeri*), fluff grass (*Tridens pulchella*), and three-awns (*Aristida* spp.). Many various associations of these species exist throughout the general project vicinity and define those communities.

4.3.2 Xeroriparian

Riparian scrub is known as xeroriparian mixed scrub, a community that typically occurs as a linear corridor of sparse to dense shrubs with trees lining washes and growing in floodplains. Xeroriparian communities are associated with an ephemeral water supply and typically contain plant species also found in adjacent upland habitat, although xeroriparian plants are commonly larger and occur at higher densities than those in adjacent uplands as a result of relatively greater water availability. The greater abundance of resources provided by the vegetation increases the value of riparian communities over the adjacent upland communities for many species.

The dominant vegetation along the xeroriparian washes includes blue paloverde, velvet mesquite (*Prosopis velutina*), catclaw acacia, ironwood, and desert broom (*Baccharis sarothroides*). Weed species include jimmyweed (*Isocoma wrightii),* Russian thistle (*Salsola iberica*), amaranthus (*Amaranthus* spp.), and London rocket (*Sisymbrium irio*). Many various associations of these species exist throughout the general project vicinity and define those communities.

Xeroriparian areas provide high quality wildlife habitat to support a larger number and variety of species. Food, foraging, burrow sites, shade, and travel corridors are examples of services that xeroriparian areas provide to wildlife populations. Species that commonly occur in these areas include the cactus mouse (*Peromyscus eremicus*), mule deer (*Odocoileus hemionus*), big brown bat (*Eptesicus fuscus*), coyote (*canis latrans)*, javelina (*Tayassu tajacu*), Gambel's quail (*Callipepla gambelii*), Gila woodpecker *(Melanerpes uropygialis*), western kingbird *(Tyrannus verticalus*), white-winged dove *(Zenaida asiatica*), verdin (*Auriparus flaviceps*), coachwhip snake (*Masticophis flagellum*), Couch's spadefoot toad (*Scaphiopus couchii)*, and collared lizard (*Crotophytus collaris)* (Entellus 2005).

Washes (e.g., Trilby Wash) provide landscape features that connect large tracts of isolated habitat across fragmented, and at times barren terrain, and are commonly referred to as wildlife corridors. Movement of wildlife species through these corridors ensures that wildlife can survive in isolated habitat and in the region overall. Wildlife corridors provide wildlife species with concealment for foraging activities, seasonal movement, and juvenile dispersal. The natural connectivity afforded by the wildlife corridors maintains genetic diversity for plant and animal wildlife species, as well as healthy populations in general (Brown 1994).

4.4 Wildlife

The rich biological diversity found in Arizona is due to the topographic (altitudinal) diversity of the state, which ranges from mountain pine forests to deserts below mean sea level (Hoffmeister, 1986). Formal wildlife surveys were not conducted for this study, however, wildlife observed within the McMicken Dam project area is listed in **Table BR 4.4.1**. Wildlife species that could potentially occur within the McMicken Dam project area is listed in **Table BR 4.4.2**.

Table BR 4.4.1 Wildlife Species Observed Within the McMicken Dam Project Area.

Common Name	Scientific Name
Birds	
Gambel's quail	*Callipepla gambelii*
Cactus wren	*Campylorhynchus brunneicapillus*
House finch	*Carpodacus mexicanus*
Turkey vulture	*Cathartes aura*
Gila woodpecker	*Melanerpes uropygialis*
Northern mockingbird	*Mimus polyglottos*
Curve-billed thrasher	*Toxostoma curvirostre*
White-winged dove	*Zenaida asiatica*
Mourning dove	*Zenaida macroura*
Mammals	
Black-tailed jackrabbit	*Lepus californicus*
Desert mule deer	*Odocoileus hemionus*
Javelina	*Tayassu tajacu*
Desert cottontail	*Sylvilagus audubonii*
Reptiles	
Zebra-tailed lizard	*Callisaurus draconoides*
Western whiptail lizard	*Cnemidopherus* tigris

Table BR 4.4.2 Additional wildlife Species That Could Potentially Occur Within the McMicken Dam Project Area.	
Common Name	**Scientific Name**
Birds	
Western burrowing owl	*Athene cunicularia hypugaea*
Black-throated sparrow	*Amphispiza bilineata*
Verdin	*Auriparus flaviceps*
Zone-tailed hawk	*Buteo albonotatus*
Red-tailed hawk	*Buteo jamaicensis*
Northern cardinal	*Cardinalis cardinalis*
Pyrrhuloxia	*Cardinalis sinuatus*
Gilded flicker	*Colaptes chrysoides*
Inca dove	*Columbina inca*
Common raven	*Corvus corax*
American Kestrel	*Falco sparverius*
Greater roadrunner	*Geococcyx californianus*
Ash-throated flycatcher	*Myiarchus cinerascens*
House sparrow	*Passer domesticus*
Cliff swallow	*Petrochelidon pyrrhonota*
Phainopepla	*Phainopepla nitens*
Black-tailed gnatcatcher	*Polioptila melanura*
Vesper sparrow	*Pooecetes gramineus*
Say's phoebe	*Sayornis saya*
White-crowned sparrow	*Zonotrichia leucophrys*
Mammals	
Kangaroo rats	*Dipodomys* spp.
Bailey's pocket mouse	*Chaetodipus baileyi*
White-throated woodrat	*Neotoma albigula*
Pack rats	*Neotoma* spp.
Arizona pocket mouse	*Perognathus amplus*
Cactus mouse	*Peromyscus eremicus*
Round-tailed ground squirrel	*Spermophilus tereticaudus*
Gray fox	*Urocyon cinereoargen*
Reptiles	
Western diamondback rattlesnake	*Crotalus atrox*
Mohave rattlesnake	*Crotalus scutulatus*
Gila monster	*Heloderma suspectum*
Gopher snake	*Pituophis melanoleucus*
Desert spiny lizard	*Sceloporus magister*
Tree lizard	*Urosaurus ornatus*
Side-blotched lizard	*Uta stansburiana*

4.5 Protected Species under the Endangered Species Act (ESA)

The U.S. Fish & Wildlife Service (USFWS) maintains a list of threatened, endangered, proposed, and candidate species and their critical habitat that are known to occur or have the potential to occur in each Arizona County. These species are currently listed or are proposed for listing as threatened, endangered, candidate, and proposed under the Endangered Species Act (ESA). Section 9 of the ESA specifically prohibits the "take" of a listed species. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct." Bird species (other than exotic) also receive legal protection under the federal Migratory Bird Treaty Act. The USFWS threatened, endangered, proposed, and candidate species list for Maricopa County, Arizona was accessed from the Arizona Ecological Services Field Office's website (June 2007). There are fourteen threatened,

endangered, and candidate species listed for Maricopa County. This list was reviewed and those species determined to have no potential to occur are included in **Table BR 4.5.** SAGE identified three threatened and endangered species that have the potential to occur within the project area and are discussed below in further detail.

TABLE BR 4.5 USFWS Special Status Species for Maricopa County and their Potential to Occur within the McMicken Dam Project Area.

Species	Listing Status	Habitat Requirements	Potential to occur within project area
Arizona cliffrose ***(Purshia subintegra)***	E	The Arizona cliffrose grows only on Tertiary limestone lakebed deposits. The distinctive white soil color of these deposits can be seen from a distance. All four localities of this species are in central Arizona below the Mogollon Rim. These known sites include the Burro Creek drainage (Mohave County), Horseshoe Lake (Maricopa County), Verde Valley (Yavapai County) and the San Carlos Indian Reservation (Graham County).	No potential for the Arizona cliffrose to occur within the project area. The project area does not contain white Tertiary limestone lakebed deposits high in lithium, nitrates, and magnesium.
California Brown pelican ***(Pelecanus occidentalis californicus)***	E	The California brown pelican is found in coastal areas, on rocky shores and cliffs, in sloughs, and in coastal river deltas. They may occasionally be seen on inland lakes. The pelican ranges along the coast from British Columbia in the north, to south Central America. The pelican is still found in most of its range, but breeding colonies in California, located in the Channel Islands National Park and the Santa Barbara Islands, continue to decline. The pelican is occasionally found along Arizona rivers and lakes. Currently, Arizona records are along the Colorado River including north to Davis Dam and even to Lake Mead (La Paz and Yuma Counties), and Gila Valley (Maricopa, Pinal, Mohave, and Gila Counties). However, isolated occurrences have been documented in most of the state.	No potential for the California brown pelican to occur within the project area. The project area does not contain large lakes or large rivers that are know to support the California brown pelican.
Desert pupfish ***(Cyprinodon macularius)***	E	The pupfish is found in shallow waters of desert springs, small streams, and marshes. There are often associated with areas of soft substrates and clear water. The species is tolerant of high salinity and water temperatures. Historically this fish was common in desert springs, marshes, backwaters, and tributaries to the Rio Sonoyta, San Pedro River, Santa Cruz River, lower Gila River, and lower Colorado River drainages in Arizona, California, and Mexico. One natural population is found in Quitobaquito Spring and Pond in Pima County, Arizona. Reintroduction of the species has been made in Pima, Pinal, Maricopa, Graham (Cold Springs), Cochise, La Paz, and Yavapai Counties in Arizona.	No potential for the desert pupfish to occur within the project area. Although the Beardsley Canal is within the project area it does not provide the habitat components known to support this species. In addition, the project area does not contain springs, small streams, or marshes within the project area.
Gila chub	E	Gila chub are normally found in the smaller	No potential for the Gila chub

TABLE BR 4.5 USFWS Special Status Species for Maricopa County and their Potential to Occur within the McMicken Dam Project Area.			
Species	**Listing Status**	**Habitat Requirements**	**Potential to occur within project area**
(Gila intermedia)		headwater streams, cienegas, and springs or marshes of the Gila River basin. They utilize diverse habitat types based on season and age. Adults have been collected from deep pools with heavily vegetated margins and undercut banks. Juveniles have been collected from riffles, pools, and undercut banks of runs. Elevational range is from 2,720 to 5,420 feet. The Gila chub's historic range likely included suitable habitat throughout the entire Gila River basin, except the Salt River drainage above Roosevelt Lake. Currently they have been recorded in approximately 30 rivers, streams, and spring-fed tributaries throughout the Gila River basin in New Mexico, northern Sonora, Mexico, and central and southeastern Arizona (Cochise, Coconino, Gila, Graham, Greenlee, Pima, Pinal, Santa Cruz, and Yavapai counties, Arizona).	to occur within project area. Although the Beardsley Canal is within the project area it does not provide the habitat components known to support this species. The project area does not contain headwater streams, cienegas, springs, or marshes that are know to support the Gila chub.
Gila topminnow *(Poeciliopsis occidentalis occidentalis)*	E	This species occurs in small streams, springs, and cienegas (seep wetlands) below 4,500 feet in elevation that contain aquatic vegetation and debris that can be used for cover. The topminnow can tolerate relatively intense fluctuations in temperature, salinity, and dissolved oxygen. It is endangered due to habitat degradation and the introduction of nonindigenous predatory or competitive fish, such as the mosquitofish. Historically, the fish was one of the most common found within the Gila River drainage in Arizona. Currently, the species only occurs in Arizona and Mexico. In Arizona, native populations are in the Santa Cruz River system. The topminnow is found in Gila, Pinal, Yavapai, Santa Cruz, Pima, Maricopa, and La Paz Counties.	No potential for the Gila topminnow to occur within project area. Although the Beardsley Canal is within the project area it does not provide the habitat components known to support this species. The project area does not contain small streams, springs, or cienegas that are known to support the Gila topminnow.
Mexican spotted owl *(Strix occidentalis lucida)*	T	The Mexican spotted owl occurs in varied habitat: mature montane forest and woodland, shady wooded canyons, and steep canyons. In forested habitat, uneven-aged stands with a high canopy closure, high tree density, and a sloped terrain appear to be key habitat components. The owl usually nests in older forests of mixed conifer or Ponderosa Pine/Gambel Oak type. Nests may be found in live trees, snags, and on canyon walls within the elevation range of 4,100 feet above mean sea level (MSL) to 9,000 feet above MSL. Populations in Arizona are patchily distributed and occur in most areas, except the arid southwestern portion of the state and much of the lowland riparian zones. Critical habitat for the species is located in Apache, Cochise, Coconino, Graham, Mohave, and Pima Counties in Arizona	No potential for the Mexican spotted owl to occur within the project area. The project area does not occur within the mature montane forest and woodland with shady wooded canyons, and steep canyons.

TABLE BR 4.5 USFWS Special Status Species for Maricopa County and their Potential to Occur within the McMicken Dam Project Area.			
Species	**Listing Status**	**Habitat Requirements**	**Potential to occur within project area**
		(as of February 1, 2001), as well as areas in New Mexico, Utah, and Colorado. Distribution gaps for the owl exist in Arizona, as several mountain ranges in west-central Arizona have not been surveyed.	
Woundfin (*Plagopterus Argentissimus*)	E	The woundfin lives in swift parts of silty streams, seemingly avoiding clear waters and very seldom found in quieter pools. It occupies the main channel of seasonally swift, highly turbid, and extremely warm streams, with sandy, constantly shifting bottoms. The woundfin is found sporadically throughout the Arizona portion of the Virgin River mainstem (Mohave County). They have been documented recently by the Virgin River Fishes Recovery Team near Cedar Pockets in the Virgin River gorge, and near the confluence of the Virgin River and Beaver Dam Wash (both locations are permanent survey sites for the team's biannual monitoring program).	No Potential for the woundfin to occur within the project area. The project area does not contain swift and highly turbid, and extremely warm streams with a shifting sandy stream bottom.
Razorback sucker *(Xyrauchen texanus)*	E	Habitat for the razorback sucker is backwaters, flooded bottomlands, pools, side channels, and other slower moving waters below 6,000 feet in elevation. Historically the sucker was found in areas with strong currents. This species is endemic to the Colorado River Basin and was historically the most widespread and abundant big-river fish in the Basin. This species is now found in the Lower Colorado River Basin in populations isolated to Mohave and Mead Lake, and the Colorado River below Lake Havasu. It is also found along the Utah/New Mexico border in the San Juan River. The species is currently found in parts of Maricopa, Greenlee, Mohave, Pinal, Yavapai, Yuma, La Paz, Gila, Coconino, and Graham Counties in Arizona.	No potential for the razorback sucker to occur within the project area. The project area does not contain flooded bottomlands, pools, side channels that are know to support this species.
Sonoran pronghorn *(Antilocapra americana sonoriensis)*	E	The physiography of Sonoran pronghorn habitat is characterized by broad alluvial valleys separated by block-faulted mountains. These valleys are partially filled with clay, silt and alluvium deposited from sheet erosion and ephemeral streams. The valleys are fairly level, with drainage to the north and west through a braided wash system in the center of the valleys. Mountain ranges generally run in a northwest to southeast direction. Sonoran pronghorn habitat is within the Lower Sonoran Desert life zone. They occur in two divisions in this life zone in Arizona; the first is the Arizona Upland subdivision of the Sonoran Desert, with basically a paloverde saguaro association, and the second is the Lower Colorado subdivision of the Sonoran Desert, with primarily a creosote-bursage	No potential for the Sonoran pronghorn to occur within the project area. The Sonoran pronghorn population in Arizona is isolated to the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O'odham Indian Reservation.

TABLE BR 4.5 USFWS Special Status Species for Maricopa County and their Potential to Occur within the McMicken Dam Project Area.			
Species	**Listing Status**	**Habitat Requirements**	**Potential to occur within project area**
		association. The Sonoran pronghorn are only found on the Cabeza Prieta National Wildlife Refuge, the Organ Pipe Cactus National Monument, the Luke Air Force Barry M. Goldwater Gunnery Range, and possibly the Tohono O'odham Indian Reservation.	
Southwestern willow flycatcher ***(Empidonax traillii extimus)***	E	Habitat for this species includes riparian habitats along rivers, streams, open water, marshy seeps, or saturated soil where dense growths of willows or other trees such as cottonwoods grow and provide canopy cover. Also found in appropriate habitat are boxelder, tamarisk, Russian olive, buttonbush, and arrowhead. Historically, the southwestern willow flycatcher's (WIFL) range included the southern portions of the states of California, Nevada, and Utah, as well as Arizona and New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico. This species has now been extirpated throughout much of its historic range. In Arizona, WIFL's are found on the upper Gila, Little Colorado, the middle Salt, the lower San Pedro, Colorado, San Francisco, Hassayampa, the upper Verde, Big Sandy, Bill Williams, and Santa Maria Rivers and Tonto Creek.	No potential for the southwestern willow flycatcher to occur within the project area. The project area does not contain riparian habitats along rivers, streams, open water, marshy seeps, or saturated soils where dense growth of willows or other trees can provide canopy cover.
Yellow-billed cuckoo ***(Coccyzus americanus)***	C	West of the Continental Divide suitable habitat for the cuckoo is limited to narrow (often widely separated) riparian cottonwood-willow galleries at elevations below 6,600 feet. The cuckoo also utilizes salt cedar. While cottonwoods are an important foraging habitat, it appears that understory habitat is important for selection of nesting sites. Historically, the cuckoo was common and widespread throughout Arizona and California. Currently, Arizona contains the largest cuckoo population among states west of the Rocky Mountains. The cuckoo is found in all counties in Arizona.	No potential for the yellow-billed cuckoo to occur within the project area. The project area does not contain any cottonwood-willow trees or riparian galleries.
Yuma Clapper Rail ***(Rallus longirostris yumanensis)***	E	The Yuma clapper rail inhabits freshwater to brackish stream-sides and marshlands below 4,500 feet in elevation. It is associated with dense riparian marsh vegetation, and it requires a wet substrate, such as a mudflat, sandbar, or slough bottom that supports cattail and bulrush strands of moderate to high density adjacent to shorelines. Historically, this species occurred in marshes of the Lower Colorado River and its tributaries in Mexico and the United States. Currently, the Yuma clapper rail occurs along the Colorado River (Yuma, La Paz, and Mohave	No potential for the Yuma clapper rail to occur within the project area. The project area does not contain freshwater to brackish stream-sides or marshlands.

TABLE BR 4.5 USFWS Special Status Species for Maricopa County and their Potential to Occur within the McMicken Dam Project Area.			
Species	**Listing Status**	**Habitat Requirements**	**Potential to occur within project area**
		Counties), from Lake Mead to Mexico, on the Gila and Salt Rivers upstream to the area of the Verde confluence (Maricopa and Pinal Counties), and at Picacho Reservoir (Pinal County). The species may also be expanding into other suitable marsh habitats in western and central Arizona.	
E = Endangered, T = Threatened, C =Candidate, D =Delisted Species Source: USFWS website: http://ifw2es.fws.gov/EndangeredSpecies/lists/ListSpecies.cfm			

4.5.1 Bald Eagle

Legal Status

The bald eagle was listed as an endangered species in 1978 and was down listed to threatened on July 12, 1995 without critical habitat. On July 6, 1999 the USFWS issued a proposal rule to delist the bald eagle (USFWS 1999a). On July 9, 2007 the USFWS issued the final rule to remove the bald eagle in the lower 48 states from the threatened and endangered species list. The final rule took affect on August 8, 2007. Although the bald eagle has been removed from the threatened and endangered species act they will receive protection under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (USFWS 2007).

Description

The bald eagle is a large bird of prey that is three feet in length and has a six to seven foot wingspan. The adults have a white head, neck, and tail with a body color that is a dark brownish-black. They have a yellow hooked bill and yellow unfeathered legs and feet. Immature bald eagles are mostly dark without the characteristic white head and tail, and may be confused with golden eagles. They feed primarily on fish, but waterfowl, small mammals, and carrion constitute a portion of the diet (AGFD 2002).

Distribution and Abundance

Bald eagles inhabit coastal areas, estuaries, unfrozen inland waters, and some arid areas of the western interior and southwestern portion of the U.S. They like areas with high water-to-land edges, and areas with unimpeded views including both horizontal and vertical aspects. Areas selected as wintering habitat will have an adequate food supply, and have open water such as river rapids, impoundments, dam spillways, lakes, and estuaries.

Historically in Arizona, bald eagles nested on the Mogollon Rim at Stoneman Lake, Mormon Lake, and Lake Mary. However, these birds are mainly wintering populations. A small resident population can be found in Central Arizona, while a wintering population of bald eagles is found in both Central and Northern Arizona. Territories and nesting localities have occurred in the Bill Williams River Drainage, upper and lower Verde and Salt Rivers (including winter and non-breeding sightings on the Black River, and on Cherry Creek), Roosevelt Lake, Gila River (only when favorable conditions are available), Colorado River (sporadically observed wintering individuals), and the Mogollon Rim and White Mountain Lakes (AGFD 2002).

Habitat

Breeding habitat of the bald eagle in Central Arizona is found mainly within two of the biotic life zones in Arizona; 1) Lower Sonoran Life Zone is from the desert valley surrounding Phoenix upstream into lower portions of the Canyon country of the Salt and Verde Rivers. This habitat is of the saguaro-paloverde community type between 200-800 meters, in valley floors and hillsides; 2) Upper Sonoran Life Zone is found farther upstream in the canyons and on the surrounding hillsides, and is characterized by coarse-soiled, rocky hillsides, talus and cliffs. It is composed of desert grassland and transition community types. They like areas with high water-to-land edge, and areas with unimpeded views including both horizontal and vertical aspects (AGFD 2002).

Nesting habitat as described by Palmer 1988, consists of areas with tall trees (usually old growth) that are taller than surroundings. The type of tree used varies geographically, for example Engelmann spruce, lodge pole pine, and douglas fir are common trees used in the Rocky Mountains. Ideally, the nest lies below the top of the crown in a live tree, where young are sheltered above from the elements. In treeless areas, the nest is usually on a high place such as a cliff face. Bald eagles nesting in Arizona typically nest on cliff faces, ledges, and pinnacles (Grubb 1985). Cliff nests are generally located within 183.0 m (600.0 ft) of the river bank and approximately 92.0 m (300.0 ft) above water (USFWS 1982). Continually used nests can become quite large, and normally last no more than a few years (Palmer 1988).

Bald eagles utilize the Lower and Upper Sonoran life zone plant communities. These include saguaro-palo verde, desert grassland, chaparral, and pinyon-juniper community types. They have been observed in Arizona in elevations ranging from 460 feet to 7,930 feet (AGFD 2002).

Habitat Evaluation and Assessment

Lake Pleasant, located to the northeast of the project area supports nesting bald eagles. There is the potential for an eagle to fly over the project area. However, the project area does not contain large cottonwood or willow trees, reservoirs, lakes, or rivers that provide foraging opportunities, potential perch sites, or nesting habitat for the bald eagle. Although the Beardsley Canal is location within the project area the canal does not provide the necessary forage base to support bald eagles. Based on this information it is unlikely that the bald eagle occurs within the McMicken Dam project area. Therefore, no further assessment for the bald eagle is recommended.

4.5.2 Lesser Long-nosed Bat

Legal Status

The lesser long-nosed bat was listed as an endangered species on September 30, 1988 throughout Mexico and Arizona (USFWS 1988). A Final Recovery Plan for the Lesser Long-Nosed bat was signed by the USFWS's Region 2 Director on March 4, 1997.

Description

The lesser long-nosed bat is a medium-sized bat with a forearm measuring 51-56 mm, a wingspan of 36-40 cm, and weight averaging 21-23 g. The lesser long-nosed bat has yellowish-brown or pale gray fur above and cinnamon-brown below. They have an elongated snout, with a nose-leaf, and an erect triangular flap of skin at the tip of the snout.

Distribution and Abundance

Historically, the lesser long-nosed bat ranged from central Arizona and southwest New Mexico through much of Mexico to El Salvador. The range within Arizona includes the Picacho Mountains southwest to the Agua Dulce Mountains, and Southeast to the Galiuro and Chiricahua Mountains, South to Mexico and beyond. The lesser long-nosed bat is not found in Arizona during the winter months (AGFD 2003).

There were 16 known large roost sites in Arizona and Mexico in 1995 (USFWS 1995). Surveys done in 1992 and 1993 estimated that the number of bats occupying these sites was greater than 200,000. Twelve major maternity roost sites are known in Arizona and Mexico. According to the same surveys the maternity roosts are occupied by over 150,000 lesser long-nosed bats. One maternity roost located in the Pinacate National Park, Sonora, Mexico is occupied by over 100,000 bats (Cockrum and Petryszyn 1991).

Habitat

Lesser long-nosed bats are found in desert grassland and shrubland up to oak transition. They roost in areas like caves, mines, tunnels, and old buildings (USFWS 1995). Lesser long-nosed bats forage in areas of saguaro, ocotillo (*Fonquieria splendens*), paloverde (*Cercidium* sp.), prickly pear and organ pipe cactus (*Stenacereus thurberi*), and later in the summer they forage on agaves (AGFD 2003). Home range for lesser long-nosed bat varies between 430-12,992 acres. Within the home range there is a core use area which is defined as; the smallest area that accounts for 50 percent of locations for each individual bat collected. Core use areas range from 7.4-103.7 acres.

Habitat Evaluation and Assessment

Suitable roosting locations for the lesser long-nosed bat may occur in the White Tank Mountains, located to the west of the project area. However, the project area does not contain any caves or mine tunnels that would provide suitable roosting habitat. In addition, the project area does not contain an adequate density of saguaros or other columnar cacti that would provide suitable foraging habitat. Based on this information it is unlikely that the lesser long-nosed bat will occur within the project area for foraging or roosting. Therefore, no further assessment for the lesser long-nosed bat is recommended.

4.5.3 Cactus ferruginous pygmy-owl

Legal Status

The cactus ferruginous pygmy-owl (CFPO) was listed as an endangered species in Arizona without critical habitat on March 10, 1997 (USFWS 1997a). This listing was done under the designation of a Distinct Population Segment (DPS) (A subgroup of a vertebrate species that is treated as a species for purposes of listing under the Endangered Species Act. It is required that the subgroup be separable from the remainder of and significant to the species to which it belongs.) under the Endangered Species Act. On July 12, 1999 the USFWS designated critical habitat for the pygmy-owl within Arizona (USFWS 1999b).

On January 9, 2001, a coalition of plaintiffs filed a lawsuit with the Arizona District Court challenging the validity of the USFWS listing the CFPO as an endangered species as a DPS and the designation of its critical habitat. Ultimately, as a result of this lawsuit, the United States Court of Appeals for the Ninth Circuit issued an opinion on August 19, 2003, stating that "the FWS acted arbitrarily and capriciously in designating the Arizona pygmy-owl population as a DPS under the *DPS Policy*". On May 15, 2006, the USFWS removed the CFPO from the endangered species list. On March 15, 2007 the Center for

Biological Diversity and the Defenders of Wildlife filed a petition to relist the pygmy-owl as endangered in Sonora Mexico and Arizona.

Description

The CFPO is a small reddish-brown, or sometimes grayish, bird with a cream-colored belly streaked with reddish-brown. Males average 62 g (2.2 oz) and females average 75 g (2.6 oz). Length is approximately 17cm (6.75 in), including tail. The eyes are yellow, the crown is lightly streaked, and there are no ear tufts. Paired black spots on the back of the head suggest "eyes." The tail is long for an owl and reddish-brown in color with dark bars. The pygmy-owl is nonmigratory throughout its range. Their diet includes other birds, lizards, insects, and small mammals (USFWS 2003a).

Distribution and Abundance

Recent records (since 1993) suggest that pygmy-owls in Arizona may be limited to Pima and Pinal Counties; however, this may be a bias of survey effort. The vast majority of past surveys have been in Pima and Pinal Counties with limited survey effort elsewhere in the state (USFWS unpubl. records). The total number of pygmy-owls and their distribution in Arizona is unknown. Survey and monitoring work in Arizona has resulted in the documentation of 41 adult pygmy-owls in 1999, 34 adults in 2000, 36 in 2001 and, 24 in 2002. A cumulative total of 85 occupied sites (including both single or paired birds) were recorded during these 4 years. Most of these pygmy-owls were distributed in four general areas: northwest Tucson, southern Pinal County, Organ Pipe Cactus National Monument, and the Altar Valley. It is believed that more pygmy-owls exist in Arizona, but systematic surveys have not been conducted in all areas of potential habitat (USFWS 2003a). Owls occupy the Tohono O'odham Nation, but no specific information on their numbers or distribution has been documented. Current boundaries of the range of the pygmy-owl in Mexico are unknown; however, recent survey work in Mexico during 2000 and 2001 has helped define the distribution and indicates that owls regularly occur along the U.S./Mexico border (Flesch and Steidl 2000).

Habitat

The historical and current known range of the CFPO contains various vegetation communities. In Arizona, CFPOs rarely occur below 1,000 feet or above 4,000 feet in elevation (Proudfoot and Johnson 2000). Historically, cottonwood/mesquite forest and mesquite woodland along the Gila and Salt Rivers and major tributaries (USFWS 2003b) were environments where CFPOs were documented. Currently, most CFPOs are found in Sonoran desertscrub communities in southern Arizona. These communities include xeroriparian vegetation (dense thickets bordering dry desert washes) consisting of paloverde (*Cercidium* spp), mesquite (spp.), acacia (spp.), and saguaro (*Carnegiea gigantea*), often with ironwood (*Olneya tesota*) and/or exotic landscaping supported by irrigation (Abbate et al. 1996). Recently, CFPOs have also been located in semidesert and Sonoran savanna grasslands with xeroriparian washes (USFWS 2003b). Dominant tree species in riparian areas include mesquite, ash, and hackberry (*Celtis* spp.). Uplands in these areas primarily consist of grasslands with dispersed mesquite trees, and very few, isolated saguaro cacti in some areas. Preliminary habitat assessment data appear to indicate that those areas of Sonoran desertscrub characterized by high plant species diversity, high structural diversity, and the presence of tall canopy are the areas being used by pygmy-owls (USFWS 2002).

Habitat Evaluation and Assessment

The project area contains scattered mesquites, paloverde, and ironwood trees growing along several of the existing washes within the project area. There are also several scattered saguaros *(Carnegia gigantea)* present within the project area. However, habitat within the project area is lacking the structure that is known to support the CFPO. In addition, the project area is located more than 21 miles away from a

known CFPO population, the maximum distance known for dispersal. Based on this information it is unlikely that the CFPO would occur within the project area. Therefore, no further assessment for the CFPO is recommended.

4.6 Special Status Species:

The Arizona Game & Fish Department (AGFD) formerly listed 116 species as extinct, endangered, threatened, and candidate in Arizona (AGFD 1988). While the terminology used was identical to that used by the USFWS, the AGFD categories (**Table BR 4.6**) were advisory and provided no legal protection for the take of such species or modification of their habitat. The latter point contrasts the USFWS categories. To avoid confusion, AGFD modified and reissued their list as "Wildlife of Special Concern in Arizona" without using the terms 'endangered' or 'threatened.' The revised list has been distributed in draft form and has not yet been officially adopted (AGFD 1996).

AGFD's online Heritage Data Management System (HDMS) was accessed (July 2006) for this review and the following species were identified by the HDMS as occurring within a 3-mile buffer of the McMicken Dam project area. **Appendix A** of this document is the detailed report provided by the HDMS regarding the McMicken Dam project area.

TABLE BR 4.6 Summary of Wildlife of Special Concern, Species of Concern by the USFWS, and Protected Native Plants with the Potential to Occur in the McMicken Dam Project Area

		Agency Listing Status			
Common Name	**Scientific Name**	**ESA**	**USFS**	**BLM**	**Arizona**
Western burrowing owl	*Athene cunicularia hypugaea*	SC		S	
Desert tortoise (Sonoran population)	*Gopherus agassizi*	SC			WSC
Cactus apple	*Opuntia engelmannii var. flavispina*				SR

Status Acronym Legend		
USFWS Endangered Species Act	Species of Concern -The terms Species of Concern or Species at Risk should be considered as terms-of-art that describe the entire realm of taxa whose conservation status may be of concern to the USFWS.	SC
U. S. Bureau of Land Management	Sensitive - Those taxa occurring on BLM Field Office Lands in Arizona which are considered sensitive	S
Arizona - Game and Fish Department	Wildlife of Special Concern in Arizona – Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the AGFD.	WSC
Arizona Department of Agriculture	Salvage Restricted - Collection only with permit	SR

4.6.1 Desert tortoise (*Sonoran population*)

The Sonoran population of the desert tortoise (south and east of the Colorado River) occurs chiefly on rocky slopes and bajadas of the Sonoran desert scrub. This species also constructs burrows in the sides of incised washes. Sonoran tortoises are herbivorous and eat dicot annuals, grasses, herbaceous perennials, shrubs, vines, and succulents. The Sonoran desert tortoise females lay one clutch of three to twelve eggs in late June to early July (AGFD 2001a). The Sonoran desert tortoise occurs in Arizona from Roosevelt Lake south along the San Pedro River into Mexico, east to the Cabeza Prieta National Wildlife Refuge and the Barry M. Goldwater Range on the Yuma Proving Ground, and north to Kingman.

No known surveys for desert tortoise exist in the McMicken Dam project area although tortoises are well known in the project vicinity. Indirect and interdependent effects on Sonoran tortoise are associated with the increase of humans in the area from project build-out and the associated stresses on the environment. Examples include agricultural land uses, residential construction, and recreational facilities such as parks and trails. Indirect effects also include predation by animals that often benefit from the presence of humans, such as ravens, coyotes, and dogs. Furthermore, humans historically have removed tortoises from the wild and adopted them as pets, and roadway fatalities often occur because tortoises seek shade under vehicles. The loss of both upland and bottomland desert scrub habitats associated with agricultural and residential land uses has likely imposed a direct affect to Sonoran desert tortoise habitat.

After reviewing the species habitat requirements and correspondence from Arizona Game and Fish Department, it has determined that the desert tortoise has the potential to occur within the project area. Therefore, it is recommended that an appropriate wildlife service provider conduct surveys prior to any construction activities to identify potential dens and individual tortoises. If the Sonoran desert tortoise is observed during the survey each tortoise will be removed and relocated outside the immediate construction area by the appropriate wildlife service provider.

Appendix B contains the Guidelines for Handling Sonoran Desert Tortoises informational sheet in the unlikely event construction personnel encounter a desert tortoise. The information is provided to prevent potential negative impacts to the desert tortoise which can be found in most areas of the Sonoran Desert.

4.6.2 Western burrowing owl

The western burrowing owl is protected under the Migratory Bird Treaty Act as amended in 1989. It has been determined that the western burrowing owl occurs throughout Arizona, with extreme northeast populations thought to be migratory and the remaining populations as residents. The burrowing owls typically enlarge the burrows made by reptiles and mammals, and are associated with rodent populations, which serve as an important prey item. Nesting has been documented in culverts. Burrowing owls typically colonize open areas. Desert habitats in southern Arizona utilized by the burrowing owl include open creosote-saltbush-bursage associations and grassland habitats that often have been grazed or are adjacent to agricultural fields. This owl is commonly found in and on irrigation canal banks, such as those in southern Arizona's agricultural areas (AGFD 2001b).

The project area contains both appropriate food and nesting habitat to support the western burrowing owl. Therefore, it has been determined that the western burrowing owl has the potential to occur within the project area. A thorough survey should be conducted by an appropriate wildlife service provider prior to any construction or development work. If the western burrowing owl is observed during the survey each owl will be removed and relocated outside the immediate construction area and placed into artificial burrows. The removal and relocation of burrowing owls will also be done by the appropriate wildlife service provider.

4.7 Native Plant Law

The Arizona Department of Agriculture (ADA) administers the Arizona Native Plant Law (ANPL) (7 ARS §§3-901 et seq.), as well as the AGFD listed plants protected under legislation. The ANPL categorizes protected native plants as "highly safeguarded' and 'salvage restricted', among others. It is unlawful to collect; transport, or kill highly safeguarded or salvage restricted plants without a permit or without following specific regulatory procedures.

Plants protected under the ANPL cannot be removed from any lands regardless of ownership status without permission and a permit from the ADA. SAGE identified nine native plant species (**Table BR 4.7**) within the McMicken Dam project area that are protected under the ANPL. Most desert plants have been grouped into five categories protected from theft, vandalism, or unnecessary destruction by the ADA. Those five categories include all of the cacti, ocotillo, and trees, such as the ironwood, paloverde, and mesquite.

TABLE BR 4.7 Detailed List of Plants Observed Within the McMicken Dam Project Area.

		Agency Listing Status			
Common Name	**Scientific Name**	**ESA**	**USFS**	**BLM**	**Arizona**
Fish hook barrel cactus	*Ferocactus wislizenii*				SR
Blue paloverde	*Cercidium floridum*				SA
Cactus apple	*Opuntia engelmannii var. flavispina*				SR
Crucifixion thorn	*Castela emoryi*				SR
Foothill paloverde	*Cercidium microphyllum*				SA
Hedgehog cactus	*Echinocereus triglochidiatus*				HS
Ironwood	*Olneya tesota*				SA, HR
Saguaro	*Carnegiea gigantea*				HS
Velvet mesquite	*Prosopis velutina*				SA, HR

Status Acronym Legend		
Arizona - Game and Fish Department & Department of Agriculture	Highly Safeguarded: no collection allowed.	HS
	Salvage Restricted - Collection only with permit	SR
	Export Restricted: transport out of State prohibited.	ER
	Salvage Assessed: permits required to remove live trees.	SA
	Harvest Restricted: permits required to remove plant by-products.	HR

SECTION BR 5: CONCLUSION AND RECOMMENDATIONS

The McMicken Dam project area is located within the ecotone between the Lower Colorado River Valley Subdivision and the Arizona Upland Subdivision (Brown 1994), with altitudinal (ecotone) variations in plant community compositions. Many ephemeral washes are located throughout the study area that provide good quality wildlife habitat.

SAGE researched previously conducted studies and projects for information on threatened and endangered species and wildlife of special concern that may occur near or within the project area. Based upon previous correspondence with AGFD, photo interpretation, and knowledge of the area gained from an onsite reconnaissance the bald eagle, lesser long-nosed bat and the CFPO was analyzed in further detail. It was determined that the McMicken Dam project area does not contain the necessary habitat elements or structure to support the bald eagle, lesser long-nosed bat, or the CFPO. Therefore, further evaluation or action is not required.

The wildlife of special concern identified by the AGFD as potentially occurring within the project area includes the Sonoran desert tortoise and the western burrowing owl. A thorough survey should be conducted by an appropriate wildlife service provider (contact the U.S. Fish and Wildlife Service) prior to any construction or development work. If the western burrowing owl is observed during the survey each owl will be removed and relocated outside the immediate construction area and placed into artificial burrows. The removal and relocation of burrowing owls will also be done by the appropriate wildlife service provider. If the Sonoran desert tortoise is observed during the survey the tortoise should be handled according to the AGFD tortoise handling guidelines (**Appendix B**).

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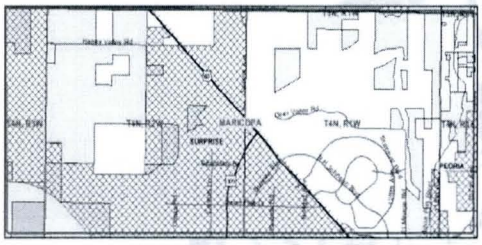
APPENDIX A

Arizona Game and Fish Department's Heritage Data Management System's Report Regarding Special Status Species Occurring within the McMicken Dam Project Area.

Arizona's On-line Environmental Review Tool
Search ID: 20060912001241
Project Name: Wittmann Southeast
Date: 9/12/2006 9:34:11 AM

Project Location

The Department appreciates the opportunity to provide in-depth comments and project review when additional information or environmental documentation becomes available



Special Status Species Occurrences/Critical Habitat/Tribal Lands within 3 miles of Project Vicinity:

Name	Common Name	ESA	USFS	BLM	State
Athene cunicularia hypugaea	Western Burrowing Owl	SC		S	
Bat Colony					
Gopherus agassizii (Sonoran Population)	Sonoran Desert Tortoise	SC			WSC
Macrotus californicus	California Leaf-nosed Bat	SC			WSC
Myotis velifer	Cave Myotis	SC		S	
Opuntia engelmannii var. flavispina					SR

Project Name: Wittmann Southeast
Submitted By: Joy Lyndes
On behalf of: FCDMC
Project Search ID: 20060912001241
Date: 9/12/2006 9:34:04 AM
Project Category: Water Use, Transfer, and Channel Activities,Impoundment (flood control, levee, dam)
Project Coordinates (UTM Zone 12-NAD 83): 369071.578, 3728046.292 meter
Project Length: 63338.327 meter
County: MARICOPA
USGS 7.5 Minute Quadrangle ID: 1200
Quadrangle Name: WHITE TANK MOUNTAINS NE
Project locality is currently being scoped

Location Accuracy Disclaimer

Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Receipt is solely responsible for the project location and thus the correctness of the Project Review Receipt content.

 APPLICATION INITIALS: _____

SAGE LANDSCAPE ARCHITECTURE & ENVIRONMENTAL

Flood Control District of Maricopa County

APPENDIX B

Handling Instructions for the Sonoran Desert Tortoise

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES ENCOUNTERED ON DEVELOPMENT PROJECTS
Arizona Game and Fish Department
Revised January 17, 1997

The Arizona Game and Fish Department (Department) has developed the following guidelines to reduce potential impacts to desert tortoises, and to promote the continued existence of tortoises throughout the state. These guidelines apply to short-term and/or small-scale projects, depending on the number of affected tortoises and specific type of project.

Desert tortoises of the Sonoran population are those occurring south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position at all times and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 105 degrees fahrenheit unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to two miles, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 105 degrees fahrenheit, the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises. Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

- These guidelines do not apply to the Mohave population of desert tortoises (north and west of the Colorado River). Mohave desert tortoises are specifically protected under the Endangered Species Act, as administered by the U.S. Fish and Wildlife Service.
- These guidelines are subject to revision at the discretion of the Department. We recommend that the Department be contacted during the planning stages of any project that may affect desert tortoises.
- Take, possession, or harassment of wild desert tortoises is prohibited by state law. Unless specifically authorized by the Department, or as noted above, project personnel should avoid disturbing any tortoise.