



United States
Department of
Agriculture
Forest
Service

**Southwestern
Region**

May 2015



Biological Evaluation

Arizona Game and Fish Department Wildlife Water Catchments

**Tonto National Forest
Cave Creek Ranger District, Maricopa County, Arizona**

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EXECUTIVE SUMMARY

The Arizona Game and Fish Department (AGFD) is proposing to construct seven new wildlife water catchments within the Cave Creek Ranger District of the Tonto National Forest (Tonto NF), Arizona. This action is needed to provide perennial surface waters for wildlife across the western and northern portions of the Cave Creek Ranger District, Tonto NF.

Based on the effects of the proposed project, the following determinations were made for federally listed, proposed, and candidate species, and critical habitats:

Species/Critical Habitat	Determination
Federally-listed species	
Bat, lesser long-nosed	NE ¹
Ocelot	NE ¹
Flycatcher, southwestern willow	NE ¹
Flycatcher, southwestern willow, critical habitat	NEDCH ¹
Owl, Mexican spotted	NE ¹
Owl, Mexican spotted, critical habitat	NEDCH ¹
Rail, Yuma clapper	NE ¹
Cuckoo, western yellow-billed	NE ¹
Cuckoo, western yellow-billed, proposed critical habitat	NEPCH ¹
Gartersnake, narrow-headed	NE ¹
Gartersnake, narrow-headed, proposed critical habitat	NEPCH ¹
Gartersnake, northern Mexican	NE ¹
Gartersnake, northern Mexican, proposed critical habitat	NEPCH ¹
Frog, Chiricahua leopard frog	NE ¹
Frog, Chiricahua leopard, critical habitat	NEDCH ¹
Chub, Gila	NE ¹

Species/Critical Habitat	Determination
Chub, Gila, critical habitat	NEDCH ¹
Minnnow, loach	NE ¹
Minnnow, loach, critical habitat	NEDCH ¹
Pikeminnow , Colorado	NE ¹
Pupfish, desert	NE ¹
Spikedace	NE ¹
Spikedace, critical habitat	NEDCH ¹
Sucker, razorback	NE ¹
Sucker, razorback, critical habitat	NEDCH ¹
Topminnow, Gila	NE ¹
Cliffrose, Arizona	NE ¹
Hedgehog Cactus, Arizona	NE ¹
Federally Listed Candidate Species	
Chub, headwater	NI ²
Chub, roundtail	NI ²
Tortoise, Morafka's desert	NI ²
Forest Service Sensitive Species	
Bat, Allen's lappet-browed	NI
Bat, pale townsend's big-eared	NI
Bat, spotted	NI
Bat, western red	NI
Falcon, American peregrine	NI

Species/Critical Habitat	Determination
Flycatcher, sulphur-bellied	NI
Goshawk, northern	NI
Junco, yellow-eyed	NI
Lizard, Bezy's night	NI
Frog, lowland leopard	NI
Frog, western barking	NI
Sucker, desert	NI
Sucker, Sonora	NI
Beetle, Parker's cyloepus riffle	NI
Caddisfly, a	NI
Mayfly, a	NI
Midge, netwing	NI
Springsnail, fossil	NI
Agave, Hohokam	NI
Agave, Tonto basin	NI
Breadroot, Verde	NI
Buckwheat, Ripley wild	NI
Bugbane, Arizona	NI
Dock, Blumer's	NI
Fleabane, Fish Creek	NI
Fleabane, Mogollon	NI
Groundsel, Toumey	NI

Species/Critical Habitat	Determination
Mallow, Pima Indian	NI
Milkwort, Hualapai	NI
Phlox, Arizona	NI
Rockdaisy, Fish Creek	NI
Rockdaisy, salt river	NI
Root, Arizona alum	NI
Root, eastwood alum	NI
Sage, Galiuro	NI
Sandwort, Mt. Dellenbaugh	NI
Sedge, Chihuahuan	NI
Sedge, Cochise	NI
Snapdragon, mapleleaf false	NI
Vetch, horseshoe deer	NI
Woodfern, Aravaipa	NI
Eagles	
Eagle, bald	NI
Eagle, golden	NI
<p>¹ Federally Listed Species: NE = the proposed action would have no effect to the species or its habitat, NEDCH = the alternative would have no effect to designated critical habitat for the species, NEPCH = the alternative would have no effect to proposed critical habitat for the species.</p> <p>² Federal Candidate Species, Forest Service Sensitive Species, and Eagles: NI = the proposed action has no impact on the species.</p>	

INTRODUCTION

The Arizona Game and Fish Department (AGFD) is proposing to construct seven new wildlife water catchments within the west central and northwest areas of the Cave Creek Ranger District within the Tonto National Forest (Tonto NF). The project areas (KC Tank, Misery Tank, Crouch Tank, Mudslinger Tank, Topsy Tank, Tangle Tank, and Long Mesa Tank) are located east of Black Canyon City in Maricopa and Yavapai counties. Individual project areas consist of a 4-acre survey block measuring 417 feet on each side; however, only a 0.5-acre area would be developed within each survey block.

This biological evaluation summarizes existing conditions on the Tonto NF related to site specific areas proposed for construction and maintenance of seven wildlife water catchments to serve as a baseline for evaluation of potential effects of the project to listed, proposed, and candidate species and their designated or proposed critical habitat under the Endangered Species Act (ESA) and Tonto NF sensitive species. This biological evaluation was developed in consideration of the best available science.

Current Management Direction

Wildlife on the Tonto NF is managed by maintaining habitat to support viable populations of all native vertebrate and invertebrate species and other desirable species as required by the National Forest Management Act (NFMA) of 1976 (P.L. 94-588). Other regulations provide for specific management of special status species based on their designations under various statutes, policies, and plans for which the Forest Service is required to comply.

- The ESA of 1973, as amended (16 U.S.C. 1531 to 1541), provides for the protection and recovery of species that are listed as threatened or endangered and the ecosystems upon which they depend.
- Bald and Golden Eagle Protection Act of 1940 (16 U.S.C. 668-668C), as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs.
- Departmental Regulation 9500-4.
 - Conduct activities and programs "to assist in the identification and recovery of threatened and endangered plant and animal species."
 - Avoid actions "which may cause a species to become threatened or endangered."
 - Manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species."
 - Manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species."
- Forest Service Manual 2600
 - A primary objective of Forest Service policy is to develop and implement management practices to ensure that species do not become threatened or endangered due to Forest Service actions. Key policies regarding sensitive species are to: 1) assist states in achieving their goals for conservation of endemic species; 2) as part of the National Environmental Policy Act process, review programs and activities, through a biological evaluation, to determine their potential effect on sensitive species; 3) avoid or minimize impacts to species whose viability has been identified as a concern; 4) if impacts cannot be avoided, analyze the significance of potential adverse effects on the population or its

habitat within the area of concern and on the species as a whole, but the decision must not result in loss of species viability or create significant trends toward federal listing; and 5) establish management objectives in cooperation with the state when projects on National Forest system lands may have a significant effect on sensitive species population numbers or distributions.

ANALYSIS AREA

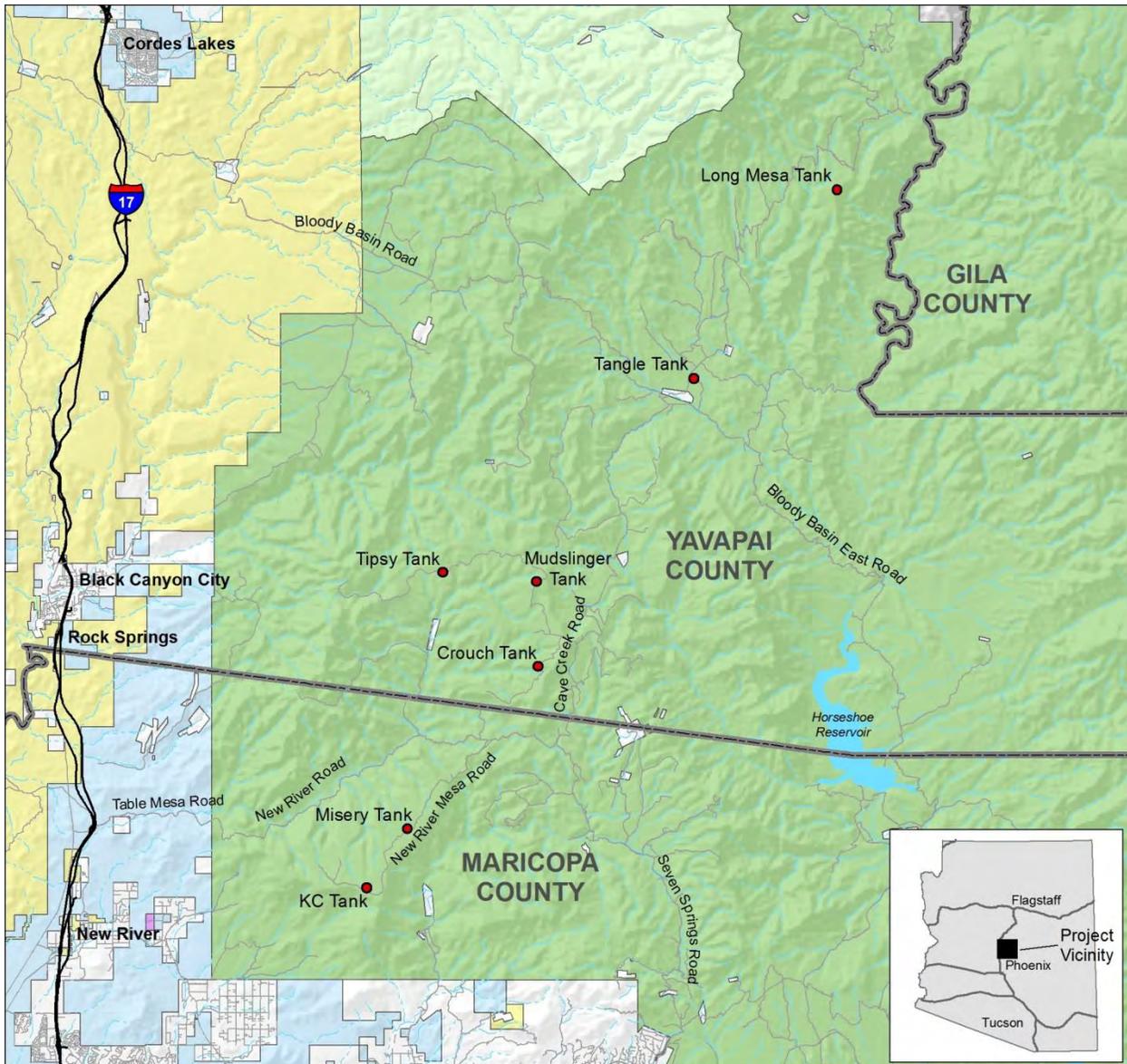
The analysis area is identified as specific areas within the Cave Creek Ranger District, Tonto NF, that have been identified as primary or alternate sites for development of a total of seven wildlife water catchments (Figure 1). The AGFD has selected seven primary and six alternate sites to be evaluated for construction and maintenance of wildlife waters within the Tonto NF (Table 1). Each primary site was evaluated for biological and cultural resources. Alternate sites were surveyed dependent on the presence of threatened, endangered, or sensitive (TES) species and cultural resources. If no TES species, critical habitat or cultural resources occurred within the primary site, no alternative site survey or additional analyses were conducted. All of the proposed wildlife water catchment sites are new sites with no existing structures and are located within remote areas of the Cave Creek Ranger District. The project area includes 13, 4-acre sites within the Cave Creek Ranger District. Ten of the 13 sites were surveyed, including one primary and two alternate sites for the Long Mesa catchment (Long Mesa Tanks 1, 2, and 3) and one primary and one alternate site for the Topsy Tank catchment (Topsy Tank 1, Topsy Tank 2). The proposed water catchment sites range in elevation from 2,967 feet to 5,042 feet and occur within the interior chaparral biotic community (Pase and Brown 1994), and are composed primarily of juniper woodlands and juniper grassland vegetation associations within the mesa-canyon habitats of the Cave Creek Ranger District (Figure 1).

Table 1: Location of proposed Wildlife Waters Cave Creek District Tonto National Forest

Proposed Wildlife Waters	Locations ¹	Latitude/Longitude Locations	Acres
KC Tank	T7 N R4E NE ¼ Section 19, New River Mesa, Arizona USGS 7.5' 1978	N33°56.480' W111°58.934'	4
Misery Tank	T7 N R4E NE¼ Section 8 and NW ¼ Section 9 New River Mesa, Arizona USGS 7.5' 1978	N33°58.055' W111°57.639'	4
Crouch Tank	T8N R4E NE ¼ Section 13 Cooks Mesa Arizona USGS 7.5' 1978	N34°02.363' W111°53.478'	4
Mudslinger Tank	T9N R4E SE¼ Section 36 Cooks Mesa Arizona USGS 7.5' 1978	N34°04.621' W111°53.526'	4
Topsy Tank 1	T9N R4E NW¼ Section 33 Cooks Mesa Arizona USGS 7.5' 1978	N34°05.036' W111°57.260'	4 Topsy Tank site was eliminated from analysis due to cultural resource issues
Topsy Tank 2	T9N R4E NE¼ Section 33 and NW¼ Section 34 Cooks Mesa Arizona USGS 7.5' 1978	N34°08.103' W111°94.180'	4
Tangle Tank 1	T9.5N R5E NE¼ Section 35 Bloody Basin Arizona USGS 7.5' 1983	N34°09.994' W111°48.573'	4
Tangle Tank 2	T9.5N R5E NE¼ Section 35 Bloody Basin Arizona USGS 7.5' 1983	N34°10.020' W111°48.503'	Not Surveyed
Tangle Tank 3	T9.5N R5E NE¼ Section 35 Bloody Basin Arizona USGS 7.5' 1983	N34°09.985' W111°48.525'	Not Surveyed

Long Mesa Tank 1	T10N R6E SE¼ Section 9 Verde Hot Spring Arizona USGS 7.5' 1967	N34°15.458' W111°43.925'	4 Long Mesa Tank 1 was eliminated from analysis due to cultural resource issues
Long Mesa Tank 2	T10N R6E NE¼ Section 16 Verde Hot Springs Arizona USGS 7.5' 1967	N34°15.094' W111°43.906'	Abbreviated survey (≈2 acres surveyed) Long Mesa Tank 2 was eliminated from analysis due to cultural resource issues
Long Mesa Tank 3	T10N R6E NE¼ Section 16 Verde Hot Springs and Wet Bottom Mesa Arizona USGS 7.5' 1967	N34°15.021' W111°43.904'	4
Long Mesa Tank 4	T10N R6E NW¼ Section 16 Verde Hot Springs and Wet Bottom Mesa Arizona USGS 7.5' 1967	N34°14.833' W111°44.009'	Not Surveyed
Total Acres Surveyed			38

¹Aliquot locations are within the Gila and Salt River Baseline and Meridian (G&SRB&M)



Source: Land Ownership GIS Coverage provided by Arizona State Land Department (2012); Arizona Transportation Information System GIS Coverage (2013)

Key

- Wildlife Water Catchment
- Arizona State Land Department
- Bureau of Land Management
- New River Kiwanis Community Park
- Prescott National Forest
- Private Land
- Tonto National Forest



Figure 1: Project Vicinity Map

PROJECT DESCRIPTION

The AGFD selected seven primary and six alternate sites to be evaluated for construction of wildlife water catchments within the Cave Creek Ranger District Tonto NF.

The proposed project includes construction of seven new wildlife water catchments by placing storage tanks, apron, drinking trough, pipeline, and fence in the proposed sites consistent with the AGFD Wildlife Water Development Standards Document (Appendix B). Activities associated with the construction of the catchments would occur within an approximately 150-foot by 150-foot area (0.5 acre). Construction of the catchments would involve the excavation of a 45-foot-long by 18-foot-wide by 5-foot-deep area with a backhoe. The excavated areas would be lined with rubber mats, and four 2,500-gallon polyethylene storage tanks would be placed inside. Each tank would be 13-foot-long by 8-foot-wide by 4-foot-deep. The tanks would be completely buried unless precluded by soil conditions, the presence of large boulders, or bedrock, in which case the tanks may be partially buried or placed above ground. A 96-foot-long by 24-foot-wide metal apron would be installed to channel precipitation to the storage tanks. A walk-in, wildlife-accessible drinking trough would be placed 40 to 60 feet away and connected to the tanks by a pipe.

The catchments would be enclosed with a black steel pipe-rail fence with vertical supports and three cross rails. Each vertical post would have a concrete footing and the post would be set to a depth of 18 inches below ground surface. The pipe-rail fences would be assembled by hand and with a skid steer tractor within a 20-foot area surrounding the 0.5-acre footprint of disturbance.

All metal components would be allowed to develop a patina, enabling these elements to recede into the landscape.

Vegetation removal and pruning would be minimized to the extent possible, and generally limited to the 0.5-acre footprint and an adjacent 20-foot area. Soil and rock from the tank excavations would be spread across the disturbed area inside of the fence.

Construction is expected to occur between October 2015 and April 2016, and is anticipated to last 14 days

The minimum number of tools and equipment necessary to complete the project would be transported to the site via trucks, all-terrain vehicles, and a helicopter. Equipment would be transported using existing two-track roads; no improvements to the roads would be necessary. When the project is completed, the construction crew would lightly rake out tire tracks from the backhoe, skid steer tractor, and trucks.

Future maintenance activities will be the responsibility of AGFD and would include the removal of debris or vegetation, as well as inspections to ensure adequate water levels and to assess wear and damage of all aboveground facilities and fence. Access for maintenance activities would also use existing roads.

AFFECTED ENVIRONMENT/EXISTING CONDITIONS

The project sites are located within the Tropical/Subtropical Steppe Division, Coniferous Open Woodland and Semidesert Province of the Dry Domain Ecoregion (Bailey 1998). Landforms vary from woodland associations dominated by Utah juniper (*Juniperus osteosperma*) with a crown height of greater than 15 feet and with a canopy cover of greater than 25 percent to sparse woodland and shrublands with widely spaced juniper trees reaching a height of less than 15 feet and a canopy cover of less than 25 percent. Some sparse shrublands are a post burn disclimax vegetation association composed of native and invasive grasses and invading woody species.

Vegetative habitats within the Tonto NF are divided into 12 habitat categories based on Potential Natural Vegetation Types (PNVT) (http://www.fs.fed.us/r3/gis/ton/potential_natural_veg.htm. 2010). PNVT

categories are coarse-scale groupings of ecosystem types that share similar geography, vegetation, and historic ecosystem disturbances such as fire, drought, and native herbivory. PNVT classification most closely matches the original habitat classification within the Tonto NF Land and Resource Management Plan and wildlife habitat types used in the Tonto NF wildlife checklists. PNVTs represent habitat types that can generally be associated with particular wildlife species, especially avian species (Corman and Wise-Gervais 2005). PNVT is used to reflect both the current wildlife habitat conditions and the expected vegetation cover type to develop following disturbances such as fire. Table 2 describes the three PNVTs identified within the project areas and the acreage of each PNVT present on the Tonto NF.

Soils within the project area consist of Lithic Torriorthents-Lithic Haplustolls-Rock Outcrop Association. This association consists of well-drained, shallow soils and rock outcrop on semiarid, mid-elevation hills and mountains. Soil profiles range from very gravelly to extremely stony sandy loam and are from noncalcareous igneous rocks to strongly calcareous on limestone rocks. The project areas vary from gently sloping to steeper slopes, with shallow depth to bedrock with rock fragments common on the surface (Hendricks 1985).

The mean annual precipitation within the project areas range from 13.08 inches recorded at Cave Creek, Arizona to 17.9 inches in Prescott, Arizona. Mean daily temperatures range from 70.65 degrees Fahrenheit (°F) in Cave Creek Arizona to 54.7 °F in Prescott Arizona (<http://www.usclimatedata.com/climate/>).

Table 2. Description and acreage of potential natural vegetation types present on the Forest

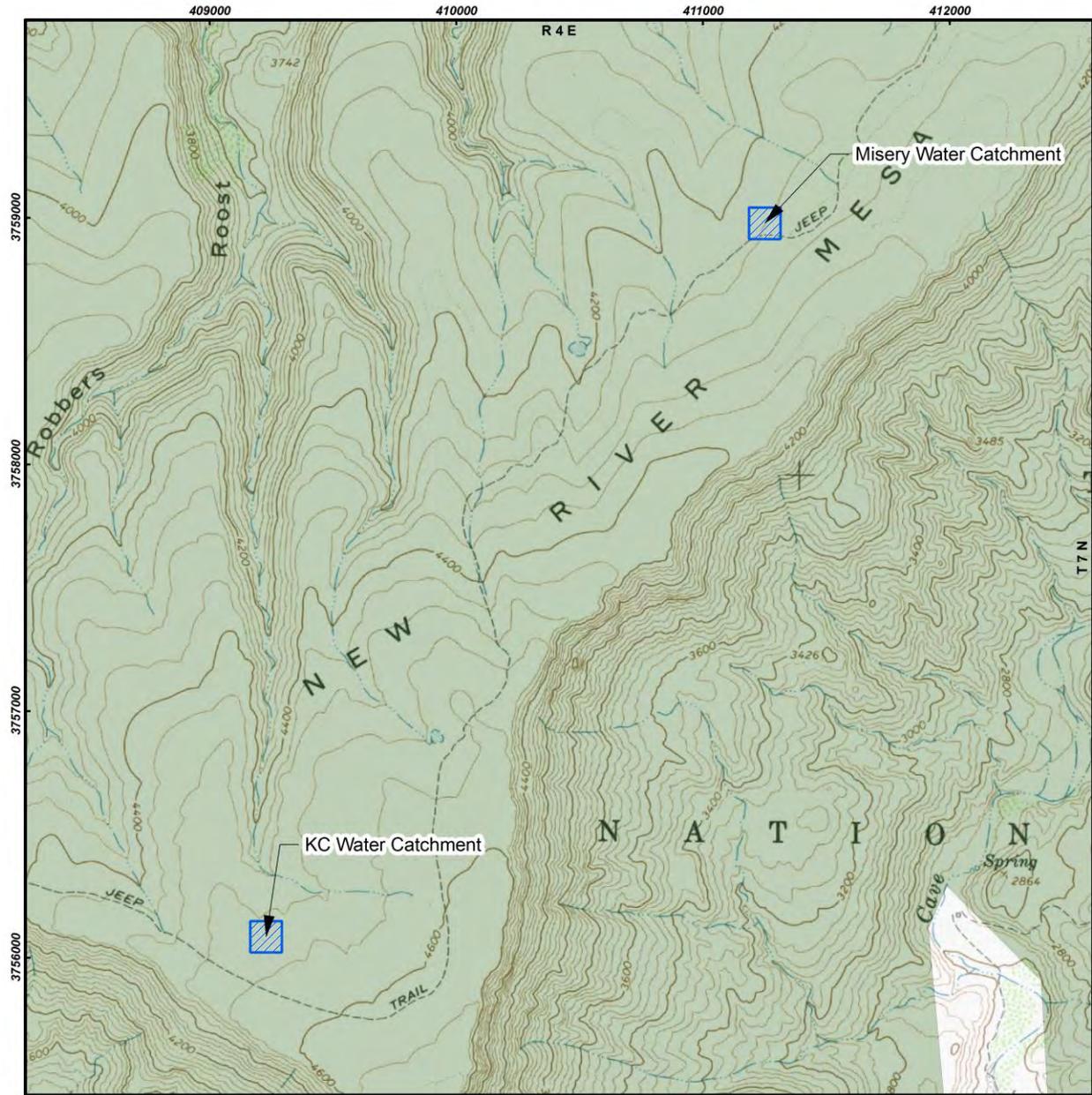
PNVT	Acres of PNVT on Forest	Description of Potential Natural Vegetation Type (PNVT)
Desert grassland	38,978	Dominant grassland associations/types are black grama (<i>Bouteloua eriopoda</i>) grassland, blue grama/hairy grama (<i>B. hirsuta</i>) grassland, tobossa (<i>Hilaria mutica</i>) grassland, giant sacaton (<i>Sporobolus wrightii</i>) grassland and mixed native perennial grassland. Shrubs also occupy these grasslands and their abundance and species composition also varies.
Pinyon-juniper (woodland, grassland and chaparral associations)	1,413,986	Pinyon-juniper woodland occur in mountain foothills and lower slopes where low-elevation desert landscapes transition into wooded evergreens. Interior chaparral consists of mixed shrub associations including but not limited to the following species: Manzanita (<i>Arctostaphylos</i> spp.), desert ceanothus (<i>Ceanothus greggii</i>), mountain mahogany (<i>Cercocarpus montanus</i>), silktassles (<i>Garrya</i> spp.), Stansbury cliffrose (<i>Purshia stansburiana</i>), shrub live oak (<i>Quercus turbinella</i>), and sumacs (<i>Rhus</i> spp.).

Site Specific Project Area Descriptions

Misery Tank

The proposed Misery Tank site was surveyed for the presence of TES species on March 30, 2015. Misery Tank is located on New River Mesa adjacent to Forest Road (FR) 17 in Section 9 of T7N R4E (Figure 2). Prior to the site survey the AGFD Heritage Data Management System (HDMS) was queried for a listing

of TES species known to occur in the vicinity of the Misery Tank site. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf (*Canis lupus baileyi*), Cave Creek Riparian Important Bird Area, the Gila topminnow (*Poeciliopsis occidentalis occidentalis*:listed threatened) and the lowland leopard frog (*Lithobates yavapaiensis*) listed as a Tonto NF sensitive species as occurring within 3 miles of the proposed Misery Tank wildlife water. The Misery Tank site occurs within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. Misery Tank is located at an elevation of 4,217 feet above mean sea level (amsl) and is classified as being within the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVT by the Tonto NF. During the site survey the Misery Tank area was determined to be a Utah juniper (*Juniperus osteosperma*)/tobosa (*Hilaria mutica*) grassland association (Appendix A Photo 1 and 2). The project area is relatively flat, with a rocky surface with no defined drainage patterns present. The proposed site is a sparse woodland with trees and shrubs generally shorter than 15 feet in height and less than 10 percent canopy cover over the 4-acre survey plot (Appendix A Photo 1 and 2). Dominant trees consist of Utah juniper, and relatively young velvet mesquite (*Prosopis velutina*). Dominant grasses include tobosa, and blue grama (*B. gracilis*). Other vegetation identified includes golden-flowered agave (*Agave chrysantha*), Engelmann's prickly pear (*Opuntia engelmannii*), beargrass (*Nolina microcarpa*), beehive cactus (*Escobaria vivipara*), snakeweed (*Gutierrezia sarothrae*). Herbaceous vegetation includes Goodding's verbena (*Glandularia gooddingii*), lupine (*Lupinus* spp.), sego lily (*Calochortus ambiguus*), and gaura (*Gaura* spp.). In addition, red brome (*Bromus rubens*) and heron bill (*Erodium cicutarium*) was present throughout the 4-acre survey plot. There was no apparent sign of livestock grazing, the presence of deer sign (*Odocoileus* spp.) was noted.



Source: USGS 7.5' Quadrangles:
New River Mesa, Ariz. (1964, 1978);
NAD 1983, UTM Zone 12

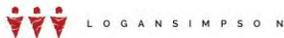
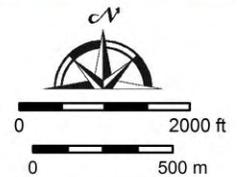
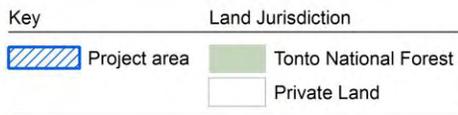


Figure 2: Location of Misery Tank and KC Tank

KC Tank

The proposed KC Tank site was surveyed for presence of TES species on March 30, 2015. KC Tank is located on New River Mesa adjacent to FR 17 in the NE¼ Section 8 and NW ¼ Section 9 of T7N R4E (Figure 2). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the KC Tank site. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf, Cave Creek Riparian Important Bird Area, lowland leopard frog and the American peregrine falcon (*Falco peregrinus anatum*) as occurring within three miles of the proposed KC Tank wildlife water site. The KC Tank site is similar to the Misery Tank site occurring within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. KC Tank is located at an elevation of 4,546 amsl, within the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVT by the Tonto NF. During the site survey the KC Tank area was determined to be a semi-desert grassland with Utah juniper and mesquite being widely spaced composed of less than 10 percent cover of the 4-acre survey plot. Dominant grasses include tobosa, blue grama, and side oats grama (*Boutelou curtipendula*) (Appendix A Photo 3 and 4). Dominant tree species consist of Utah juniper, and relatively young mesquite. Other vegetation identified includes Englemann's prickly pear, banana yucca (*Yucca baccata*), beargrass (*Nolina microcarpa*), beehive, snakeweed, and Rusby's desert-mallow (*Sphaeralcea rusbyi*). Herbaceous vegetation include Goodding's verbena, lupine, blue dicks (*Dichelostemma capitatum*), crowpoison (*Nothoscordum bivalve*), pepperweed (*Lepidium* spp.), and fleabane (*Erigeron divergens*). In addition, red brome was present throughout the 4-acre survey plot.

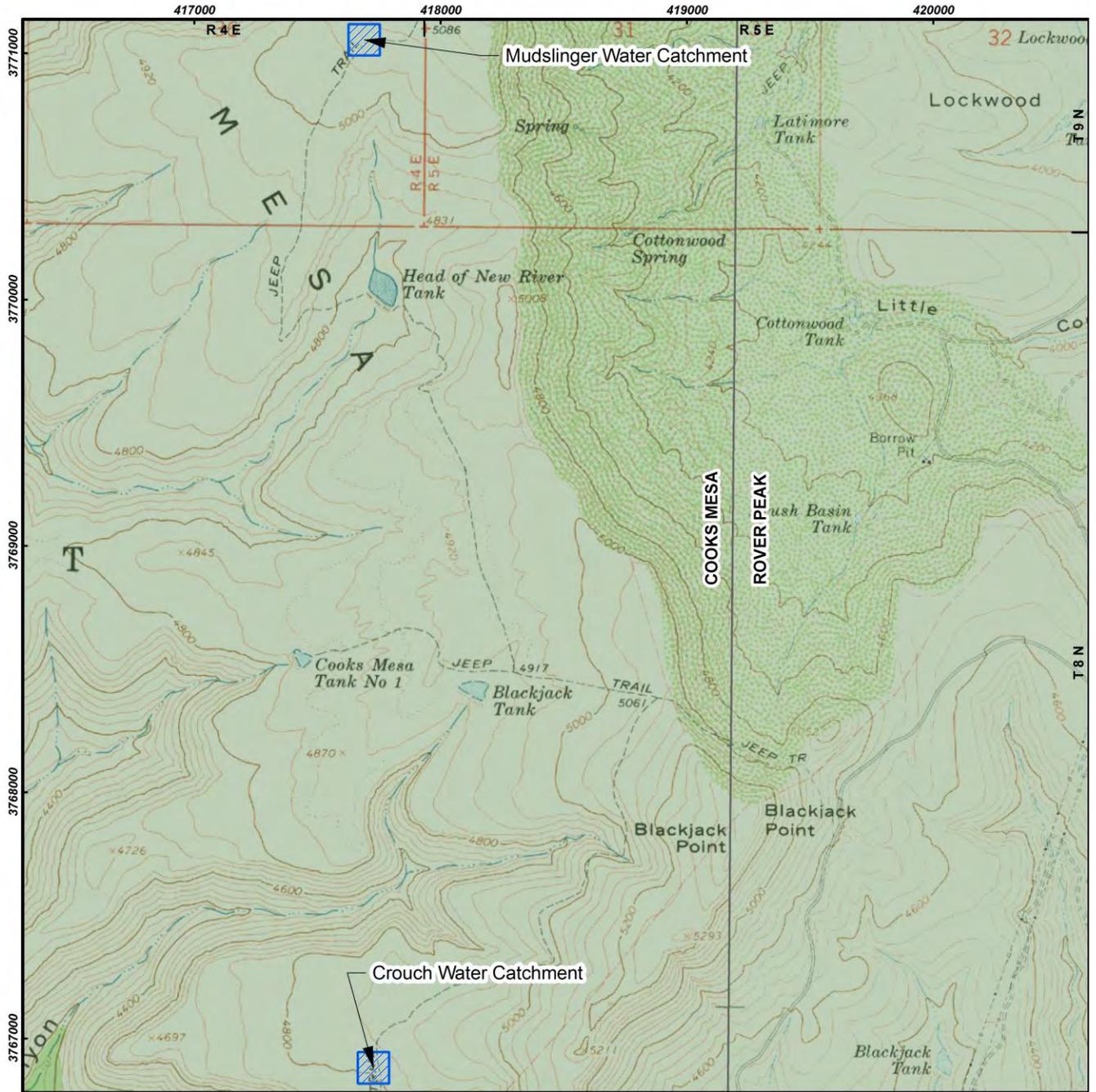
Crouch Tank

The proposed Crouch Tank site was surveyed for presence of TES species on March 31, 2015. Crouch Tank is located on Cooks Mesa adjacent to FR 600 in the NE¼ Section 13 T8N R4E and the NW ¼ Section 18 T8N R5E (Figure 3). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Crouch Tank site. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf and the golden eagle (*Aquila chrysaetos*), Gila longfin dace (*Agosia chrysogaster chrysogaster*), Sonoran Desert population of bald eagle (*Haliaeetus leucocephalus*), lowland leopard frog, and Eastwood alum root (*Heuchera eastwoodiae*) as occurring within three miles of the proposed Crouch Tank wildlife water catchment site. The Crouch Tank site is similar to the Misery and KC Tank sites as occurring within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. However, some old growth junipers with a diameter at root crown exceeding 16 inches were observed. Crouch Tank is located at an elevation of 4,809 amsl within the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVT by the Tonto NF. During the site survey the Crouch Tank area was determined to be a Utah juniper/grama grass sparse woodland association with tree cover exceeding 10 percent of the 4-acre survey plot (Appendix A Photo 5 and 6). Additional shrub species observed includes shrub live oak (*Quercus turbinella*), ceanothus (*Ceanothus greggii*), squawbush (*Rhus trilobata*) and manzanita (*Archostaphylos pungens*). Dominant grasses include tobosa, blue grama, and side oats grama. Additional grasses observed include poverty threawn (*Aristida divaricata*) and bullgrass (*Muhlenbergia emersleyi*). Other vegetation identified includes prickly pear, banana yucca, buckwheat (*Eriogonum wrightii*), Engelmann hedgehog (*Echinocereus engelmannii*), beargrass, beehive cactus, and snakeweed. Herbaceous vegetation includes Goodding's verbena, lupine, blue dicks, parsley (*Apiacea* sp.), Indian paintbrush (*Castilleja* spp.) and fleabane. In addition, red brome was present throughout the 4-acre survey plot.

Mudslinger Tank

The proposed Mudslinger Tank site was surveyed for presence of TES listed species on March 31, 2015. Mudslinger Tank is located on Cooks Mesa adjacent to FR 560 in the SE¼ Section 36 T9N R4E (Figure 3). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Mudslinger Tank site. The HDMS query listed the yellow-billed cuckoo (*Coccyzus*

americanus: listed threatened), 10J area Zone 2 for Mexican gray wolf, golden eagle, lowland leopard frog, and the Eastwood alum root (*Heuchera eastwoodiae*) as occurring within 3 miles of the proposed Mudslinger Tank wildlife water site. The Mudslinger Tank site is similar to the Misery, KC and Crouch Tank sites as occurring within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. Mudslinger Tank is located at an elevation of 5,042 amsl and is classified as being within the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVN by the Tonto NF. During the site survey the Mudslinger Tank area was determined to be a Utah juniper/grama/tobosa grass sparse woodland association with tree cover not exceeding 10 percent with shrub/grass/forb cover estimated at 60 percent of the 4-acre survey plot (Appendix A Photo 7 and 8). Additional shrub species observed includes Utah serviceberry (*Amelanchier utahensis*) and catclaw (*Acacia greggii*). Dominant grasses include blue grama, and side oats grama. Additional grasses observed include deergrass (*Muhlenbergia rigens*) and Arizona cottontop (*Digitaria californica*). Other vegetation identified includes golden-flowered agave, Englemann's prickly pear, buckwheat, Engelmann hedgehog, beargrass, beehive cactus, Fendler's globemallow (*Sphaeralcea fendleri*) and snakeweed. Herbaceous vegetation includes Goodings verbena, blue dicks, and Nevada biscuitroot (*Lomatium nevadense*). In addition, red brome was present throughout the 4-acre survey plot.



Source: USGS 7.5' Quadrangles:
 Cooks Mesa, Ariz. (1964, 1978);
 Rover Peak, Ariz. (1967);
 NAD 1983, UTM Zone 12

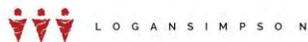
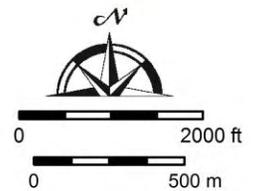


Figure 3: Location of Crouch Tank and Mudslinger Tank

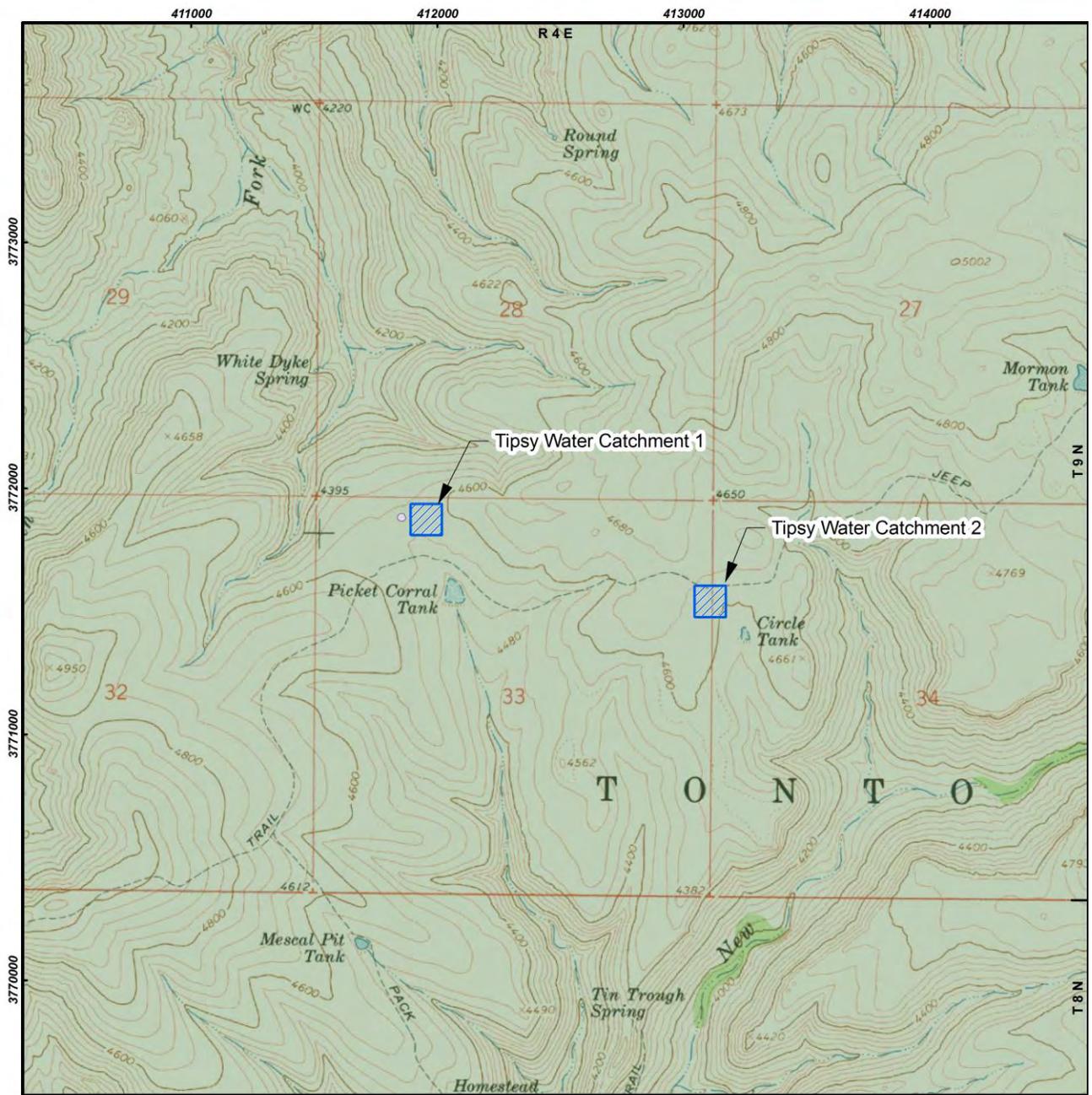
Tipsy Tank 1

The proposed Tipsy Tank 1 site was surveyed for presence of TES species on March 31, 2015. Tipsy Tank 1 is located on Cooks Mesa adjacent to FR 560 in the NW¼ Section 33 T9N R4E (Figure 4). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Tipsy Tank 1 site. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf, as occurring within three miles of the proposed Tipsy Tank wildlife water site. The Tipsy Tank 1 site is similar to the Misery, KC, Crouch and Mudslinger Tank sites as occurring within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. Tipsy Tank 1 is located at an elevation of 4,593 amsl and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the interior chaparral PNVT by the Tonto NF. During the site survey the Tipsy Tank 1 area was determined to be a Utah juniper/grama/tobosa grass sparse woodland association with tree cover not exceeding 10 percent with grass cover estimated at 40 percent of the 4-acre survey plot (Appendix A Photo 9 and 10). Additional shrub species observed includes ceanothus, squawbush, Fremont barberry (*Berberis fremontii*), Utah serviceberry, and shrub live oak. Dominant grasses include blue grama, side oats grama and tobosa. Additional grasses observed include fluff grass (*Erioneuron pulchellus*), poverty threeawn, and Arizona cottontop. Other vegetation identified include golden-flowered agave, Engelmann's prickly pear, buckwheat, Engelmann hedgehog, beargrass, beehive cactus, Fendler's globemallow, groundsel (*Senecio* spp.), and snakeweed. Herbaceous vegetation include tuber anemone (*Anemone tuberosa*), spiny cliffbrake (*Pellaea truncate*), blue dicks, and penstemon (*Penstemon pseudospecta*). In addition, red brome, mustard (*Brassica* spp.) and heron bill was present throughout the 4-acre survey plot.

The Tipsy Tank 1 site was not further evaluated due to the presence of cultural resources.

Tipsy Tank 2

The proposed Tipsy Tank 2 site was surveyed for presence of TES species on May 6, 2015. Tipsy Tank 2 is located on Cooks Mesa adjacent to FR 560 in portions of the NE¼ Section 33 and NW¼ Section 34 T9N R4E (Figure 4). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Tipsy Tank-2 site. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf, as occurring within three miles of the proposed Tipsy Tank-2 wildlife water site. The Tipsy Tank 2 site is similar to the Tipsy, Misery, KC, Crouch and Mudslinger Tank sites as occurring within a previous wildfire burn. Scattered remnants of burned juniper and brush are evident in the 4-acre survey plot. Tipsy Tank 2 is located at an elevation of 4,584 amsl gently sloping to the southeast and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within interior chaparral PNVT by the Tonto NF. During the site survey the Tipsy Tank area was determined to be a Utah juniper/tobosa grass sparse woodland association with tree and shrub height generally less than 15 feet with tree cover less than 10 percent. Perennial grass cover is estimated at 40 percent with total vegetative ground cover estimated at 60 percent over the 4-acre survey plot (Appendix A Photo 11 and 12). Additional shrub species observed includes mesquite, squaw bush, catclaw, sugar sumac (*Rhus ovata*), yerba de pismo (*Baccharis pteronioides*), New Mexico thistle (*Cirsium neomexicanium*) and shrub live oak. Dominant grasses include tobosa grass, big squirreltail (*Elymus multisetus*), six weeks grass (*Festuca octoflora*), and side oats grama grass. Other vegetation identified includes Engelmann's prickly pear, buckwheat, Engelmann hedgehog, bear grass, beehive cactus, globemallow (*Sphaeralcea ambigua*), groundsel, and snakeweed. Herbaceous vegetation includes primrose (*Oenothera* spp.), Goodding's verbena, rattlesnake weed (*Chamaesyce albomarginata*), bur ragweed (*Ambrosia confertiflora*), tansyaster (*Machaeranthera tanacetifolia*), silver puffs (*Microseris linearifolia*), Arizona Mariposa lily (*Calochortus ambiguus*), sida (*Sida filicaulis*), salsify (*Tragopogon* spp.), woollystar (*Eriastrum diffusum*), spiny goldenbush (*Xanthisma spinulosum*), fleabane, Carolina geranium (*Geranium carolinianum*), parsley, peavine (*Vicia* spp), and Texas bindweed (*Convolvulus equitans*). In addition, red brome and heron bill were present throughout the 4-acre survey plot.



Source: USGS 7.5' Quadrangle:
Cooks Mesa, Ariz. (1964, 1978);
NAD 1983, UTM Zone 12

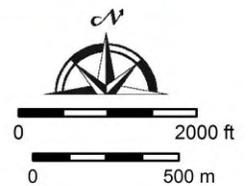
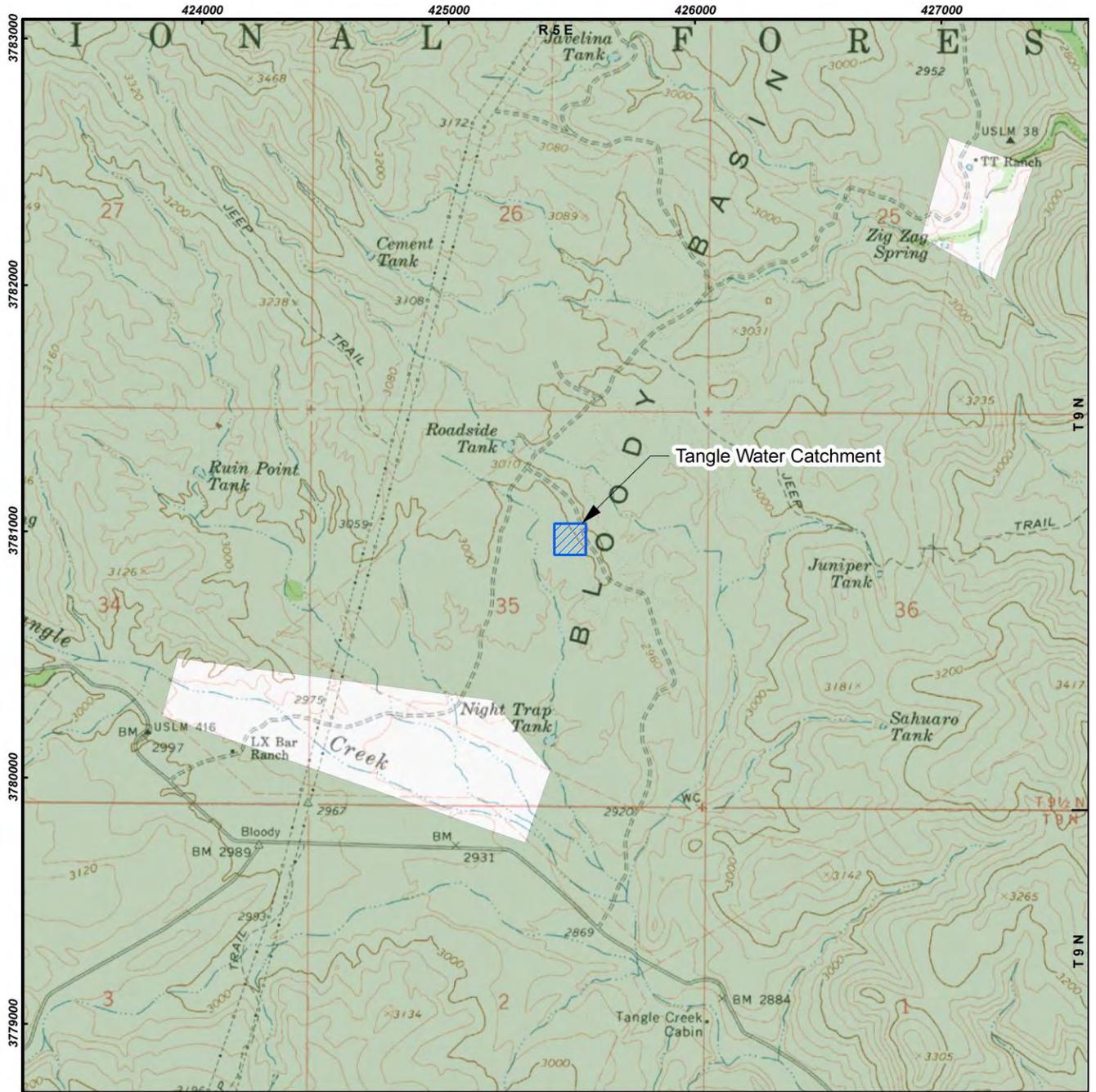


Figure 4: Location of Topsy Tank 1 and Topsy Tank 2

Tangle Tank

The proposed Tangle Tank site was surveyed for presence of TES species on April 1, 2015. Tangle Tank is located in Bloody Basin adjacent to FR 16 north of the FR 24 and FR 269 intersection in the NE¼ Section 35 T9.5N R5E (Figure 5). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Tangle Tank site. The HDMS query listed the yellow-billed cuckoo (listed threatened), the Gila topminnow (listed endangered), the 10J area Zone 2 for Mexican gray wolf, golden eagle, Sonoran Desert population of bald eagle, desert sucker (*Catostomus clarkii*), Gila longfin dace, Parker's riffle beetle (*Cylloepus parkeri*), and the lowland leopard frog as occurring within three miles of the proposed Tangle Tank site. The Tangle Tank site is not located within a previous wildfire burn. Tangle Tank is located at an elevation of 2,967 amsl and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the semidesert grassland PNVT by the Tonto NF. During the site survey the Tangle area was determined to be a mesquite/tobosa grassland association with mesquite cover not exceeding 10 percent and with grass cover estimated at 35 percent of the 4-acre survey plot (Appendix A Photo 13 and 14). Additional shrub species observed includes juniper, canotia (*Canotia holocantha*), Fremont barberry, gray thorn (*Ziziphus obtusifolia*) and feather dalea (*Dalea formosa*). Dominant grasses include tobosa, side oats grama, and blue grama. Additional grasses observed include six weeks grass (*Festuca octoflora*) fluffgrass, poverty threeawn, and Arizona cottontop. Other vegetation identified includes Englemann's hedgehog, beargrass, beehive cactus, Christmas cholla (*Opuntia leptocaulis*), buckhorn cholla (*Cylindropuntia acanthocarpa*), Fendler's globemallow, groundsel (*Senecio* spp.), and snakeweed. Herbaceous vegetation includes fiddleneck (*Amsinckia menziesii*), primrose, sego lily (*Calochortus nuttallii*), desert mariposa (*Calochortus kennedyi*), desert marigold (*Baileya multiradiata*) and desert rhubarb (*Rumex hymenosepalus*). In addition, red brome, mustard (*Brassica* spp.) and heron bill was present throughout the 4-acre survey plot.



Source: USGS 7.5' Quadrangle:
Arnold Mesa, Ariz. (1967);
NAD 1983, UTM Zone 12

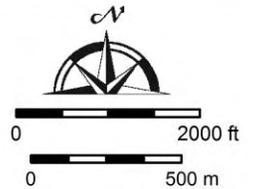
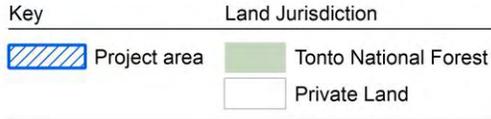


Figure 5: Location of Tangle Tank

Long Mesa Tank 1

The proposed Long Mesa Tank 1 site was surveyed for presence of TES species on April 1, 2015. Long Mesa Tank 1 is located on Long Mesa adjacent to FR 16 in the S½ Section 9 T10N R6E (Figure 6). Prior to the site survey the HDMS was queried for a listing of TESA species known to occur in the vicinity of the Long Mesa Tank 1 site. The HDMS report was returned as a combined query, therefore the species list include Long Mesa Tank sites 1 through 4. The HDMS query listed the 10J area Zone 2 for Mexican gray wolf, and Colorado pikeminnow (*Ptychocheilus lucius*), designated critical habitat for southwestern willow flycatcher (*Empidonax traillii extimus*) and razor back sucker (*Xyrauchen texanus*), proposed critical habitat for the northern Mexican gartersnake (*Thamnophis eques*), and narrow headed gartersnake (*Thamnophis rufipunctatus*), roundtail chub (*Gila robusta*) and the American peregrine falcon as occurring within three miles of the proposed Long Mesa Tank site. The Long Mesa Tank 1 site is not located within a previous wildfire burn. Long Mesa Tank 1 site is located at an elevation of 4,368 amsl and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVN by the Tonto NF. During the site survey the Long Mesa Tank 1 area was determined to be a juniper woodland association with juniper canopy cover exceeding 30 percent and with grass cover estimated at 25 percent of the 4-acre survey plot (Appendix A Photo 15 and 16). Additional shrub species observed include sugar sumac. Dominant grasses include side oats grama, tobosa and blue grama. Other vegetation identified includes golden-flowered agave, prickly pear, bear grass, buckwheat, Fendler's globemallow, and snake weed. Herbaceous vegetation includes blue dicks, fleabane, and Goodding's verbena. In addition, red brome was present throughout the 4-acre survey plot.

Long Mesa Tank 1 was not further evaluated due to the presence of cultural resources.

Long Mesa Tank 2

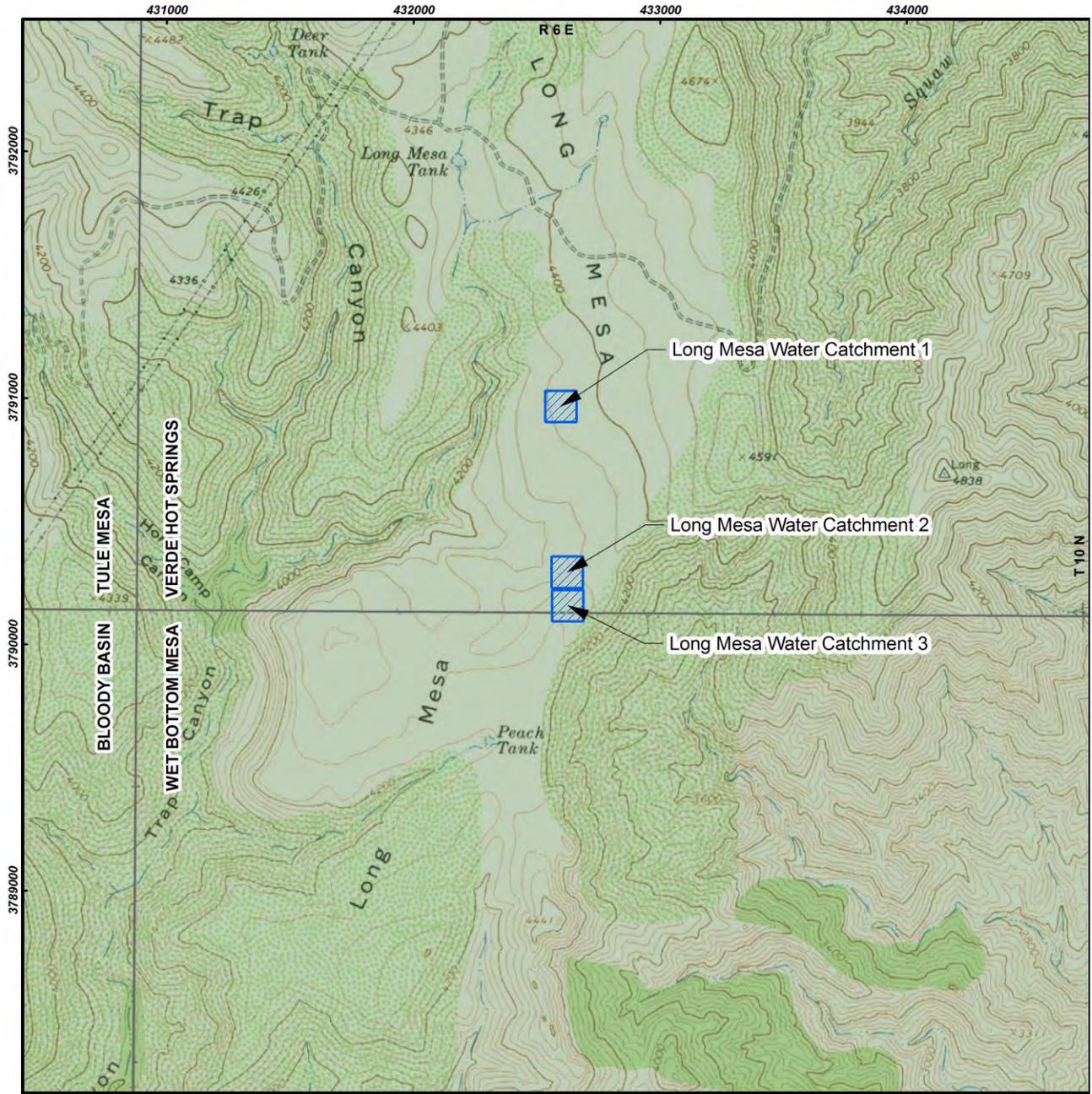
The proposed Long Mesa Tank 2 site was surveyed for presence of TES species on April 1, 2015. Long Mesa Tank 2 is located on Long Mesa adjacent to FR 16 in the NE¼ Section 16 T10N R6E (Figure 6). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Long Mesa Tank 2 site. The HDMS report was returned as a combined query, therefore the species list include Long Mesa Tank sites 1 through 4. See Long Mesa Tank 1 for the HDMS query results for Long Mesa Tank 2. The Long Mesa Tank 2 site is not located within a previous wildfire burn. Long Mesa Tank 2 site is located at an elevation of 4,311 amsl and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVN by the Tonto NF. During the site survey the Long Mesa Tank 2 area was determined to be a juniper woodland association with juniper canopy cover exceeding 30 percent and with grass cover estimated at 25 percent of the 4-acre survey plot (Appendix A Photo 17). Additional shrub species observed include sugar sumac, ceanothus, and cliff rose.

The Long Mesa 2 Tank survey was abbreviated with approximately 2-acres surveyed. Long Mesa Tank 2 was not further evaluated due to the presence of cultural resources.

Long Mesa Tank 3

The proposed Long Mesa Tank 3 site was surveyed for presence of TES listed species on April 1, 2015. Long Mesa Tank 3 is located in Long Mesa adjacent to FR 16 in the NE¼ Section 16 T10N R6E (Figure 6). Prior to the site survey the HDMS was queried for a listing of TES species known to occur in the vicinity of the Long Mesa Tank 3 site. The HDMS report was returned as a combined query, therefore the species list include Long Mesa Tank sites 1 through 4. See Long Mesa Tank 1 for the HDMS query results for Long Mesa Tank 3. The Long Mesa Tank 3 site is not located within a previous wildfire burn. Long Mesa Tank 3 site is located at an elevation of 4,288 amsl and is classified as being in the interior chaparral biotic community (Pase and Brown 1994). The area is mapped within the pinyon-juniper PNVN

by the Tonto NF. During the site survey the Long Mesa Tank 3 area was determined to be a juniper/grama grassland association with juniper canopy cover exceeding 10 percent and with grass cover estimated at 60 percent of the 4-acre survey plot (Appendix A Photo 18 and 19). Additional shrub species observed include sugar sumac, ceanothus, Fremont barberry, and cliff rose. Dominant grasses include tobosa, side oats grama, and blue grama. Additional grasses observed include poverty threeawn, Arizona cottontop and cane beardgrass (*Andropogon barbinodis*). Other vegetation identified includes golden-flowered agave, Englemann's hedgehog, beehive cactus, beargrass, Fendler's globemallow, groundsel, and slender goldenweed. Herbaceous vegetation includes Indian paintbrush, fleabane, rattlesnake weed, anemone, phacelia (*Phacelia* spp.) and Nevada biscuitroot. In addition, red brome and heron bill were present throughout the 4-acre survey plot.



Source: USGS 7.5' Quadrangles:
 Bloody Basin, Ariz. (1967);
 Tule Mesa, Ariz. (1967);
 Wt Bottom Mesa, Ariz. (1967);
 Verede Hot Springs, Ariz. (1967);
 NAD 1983, UTM Zone 12



Key		Land Jurisdiction	
	Project area		Tonto National Forest

0 2000 ft
 0 500 m

Figure 6: Location of Long Mesa Tanks

Species Identification

Threatened and Endangered Species Considered

Federally listed species are protected under the Endangered Species Act. The goal of the Endangered Species Act is to protect imperiled species from extinction. Forest Service's objective is to achieve species recovery objectives, so that special protection measures provided under the Endangered Species Act are no longer necessary. Table 3 identifies the species listed under the Endangered Species Act that are found on the Tonto National Forest. Table 4 lists critical habitats found within the Tonto National Forest. Table 5 lists the Region 3 Forest Sensitive Species for the Tonto NF (USDA 2015).

Table 3: Species listed under the Endangered Species Act that are found on the Tonto National Forest

Common name	Scientific name	Status
Mammals		
Bat, lesser long-nosed	<i>Leptonycteris curasoae yerbabuenae</i>	E
Ocelot	<i>Leopardus pardalis</i>	E
Birds		
Flycatcher, southwestern willow	<i>Empidonax traillii extimus</i>	E
Owl, Mexican spotted	<i>Strix occidentalis lucida</i>	T
Rail, Yuma clapper	<i>Rallus longirostris yumanensis</i>	E
Cuckoo, western yellow-billed	<i>Coccyzus americanus occidentalis</i>	T
Reptiles		
Gartersnake, narrow-headed	<i>Thamnophis rufipunctatus</i>	T
Gartersnake, northern Mexican	<i>Thamnophis eques megalops</i>	T
Amphibians		
Frog, Chiricahua leopard	<i>Lithobates [Rana] chiricahuensis</i>	T
Fish		
Chub, Gila	<i>Gila intermedia</i>	E
Minnnow, loach	<i>Tiaroga cobitis</i>	T
Pikeminnow, Colorado (non-essential experimental)	<i>Ptychocheilus lucius</i>	E
Pupfish, desert	<i>Cyprinodon macularius</i>	E
Spikedace	<i>Meda fulgida</i>	T

Common name	Scientific name	Status
Sucker, razorback	<i>Xyrauchen texanus</i>	E
Topminnow, Gila	<i>Poeciliopsis occidentalis occidentalis</i>	E
Plants		
Cliffrose, Arizona	<i>Purshia subintegra</i>	E
Hedgehog cactus, Arizona	<i>Echinocereus triglochidiatus var. arizonicus</i>	E
Candidate Species		
Chub, headwater	<i>Gila nigra</i>	C
Chub, roundtail	<i>Gila robusta</i>	C
Tortoise, Morafka's desert	<i>Gopherus morafkai</i>	C

E – endangered; T – threatened; PT – proposed threatened; C – candidate

Critical Habitats Considered

Table 4: Species with critical habitat designated or proposed under the Endangered Species Act

No critical habitat that has been proposed or designated for threatened or endangered species as listed under the ESA occurred within the project areas.

Common name	Scientific name	Final ruling date
Flycatcher, southwestern willow	<i>Empidonax traillii extimus</i>	3 Jan 2013
Owl, Mexican spotted	<i>Strix occidentalis lucida</i>	31 Aug 2004
Cuckoo, western yellow-billed	<i>Coccyzus americanus occidentali</i>	Proposed
Gartersnake, narrow-headed	<i>Thamnophis rufipunctatus</i>	Proposed
Gartersnake, northern Mexican	<i>Thamnophis eques megalops</i>	Proposed
Frog, Chiricahua leopard	<i>Lithobates [Rana] chiricahuensis</i>	20 Mar 2012
Chub, Gila	<i>Gila intermedia</i>	02 Nov 2005
Minnow, loach	<i>Tiaroga cobitis</i>	23 Feb 2012
Spikedace	<i>Meda fulgida</i>	23 Feb 2012
Sucker, razorback	<i>Xyrauchen texanus</i>	21 Mar 2004

Forest Sensitive Species Considered

Table 5: Tonto National Forest Sensitive Species (2015)

Forest Service Sensitive Species	Ranger District ¹
Bat, Allen's lappet-browed (<i>Idionycteris phyllotis</i>)	PVRD, TBRD
Bat, pale townsend's big-eared (<i>Corynorhinus townsendii</i>)	GRD, MRD, PVRD, TBRD
Bat, spotted (<i>Euderma maculatum</i>)	No Records
Bat, western red (<i>Lasirurus blossevillii</i>)	CCRD, Verde River south of Bartlett reservoir, near Horseshoe reservoir, GRD, MRD, PVRD
Falcon, American peregrine (<i>Falco peregrinus</i>)	All Districts
Flycatcher, sulphur-bellied (<i>Myiodynastes luteiventris</i>)	PRD, PVRD
Goshawk, northern (<i>Accipiter gentilis</i>)	PRD, PVRD
Junco, yellow-eyed (<i>Junco phaeonotus</i>)	GRD
Lizard, Bezy's night (<i>Xantusia bezyi</i>)	CCRD, GRD, MRD, TBRD
Frog, lowland leopard (<i>Lithobates yavapaiensis</i>)	All Districts
Frog, western barking (<i>Eleutherodactylus augusti cactorum</i>)	PVRD, TBRD
Sucker, desert (<i>Catostomus clarki</i>)	All Districts
Sucker, Sonora (<i>Catostomus insignis</i>)	CCRD, MRD, TBRD, GRD
Beetle, Parker's cilloopus riffle (<i>Cylloepus parkeri</i>)	CCRD, Roundtree Canyon
Caddisfly, a (<i>Wormaldia plana</i>)	PRD
Mayfly, a (<i>Fallceon eatoni</i>)	GRD
Midge, netwing (<i>Agathon arizonicus</i>)	PVRD
Springsnail, fossil (<i>Pyrgulopsis simplrx</i>)	PRD
Agave, Hohokam (<i>Agave murpheyi</i>)	CCRD, MRD, TBRD
Agave, Tonto basin (<i>Agave delamateri</i>)	GRD, MRDR, PVRD, TBRD
Breadroot, Verde (<i>Pediomelum verdiense</i>)	No Records but Tertiary Verde Formation occur in CCRD
Buckwheat, Ripley wild (<i>Eriogonum ripleyi</i>)	CCRD- Horseshoe Lake and Chalk Mountain
Bugbane, Arizona (<i>Cimicifuga arizonica</i>)	PVRD
Dock, Blumer's (<i>Rumex orthoneurus</i>)	PRD, PVRD

Forest Service Sensitive Species	Ranger District ¹
Fleabane, Fish Creek (<i>Erigeron piscaticus</i>)	MRD
Fleabane, Mogollon (<i>Erigeron anchana</i>)	GRD, PRD, PVRD, TBRD
Groundsel, Toumey (<i>Packera neomexicana</i> var. <i>toumeyi</i>)	GRD
Mallow, Pima Indian (<i>Abutilon incanum</i>)	MRD
Milkwort, Hualapai (<i>Polygala rusbyi</i>)	CCRD- Southwest of Horseshoe Lake
Phlox, Arizona (<i>Phlox amabilis</i>)	PRD
Rockdaisy, Fish Creek (<i>Perityle saxicola</i>)	MRD, PVRD, TBRD
Rockdaisy, salt river (<i>Perityle gilensis</i>)	Expected in Salt River Canyon
Root, Arizona alum (<i>Heuchera glomerata</i>)	CCRD, GRD, PRD, PVRD
Root, eastwood alum (<i>Heuchera cylindrica</i>)	CCRD- Lime Creek and at the north end of the New River Mountains GRD, PRD, PVRD
Sage, Galiuro (<i>Salvia amissa</i>)	MRD, PVRD
Sandwort, Mt. Dellenbaugh (<i>Arenaria aberrans</i>)	No Records
Sedge, Chihuahuan (<i>Carex chihuahuensis</i>)	PVRD
Sedge, Cochise (<i>Carex ultra</i>)	CCRD- one mile southwest of Tangle Peak associated with Tangle Creek
Snapdragon, mapleleaf false (<i>Mabrya acerifolia</i>)	MRD
Vetch, horseshoe deer (<i>Lotus mearnsii</i> var. <i>equisolensis</i>)	CCRD-Southwest of Horseshoe Lake
Woodfern, Aravaipa (<i>Thelypteris puberula</i> var. <i>sonorensis</i>)	No Records
¹ Forest Service Sensitive Species CCRD = Cave Creek Ranger District, GRD = Globe Ranger District, MRD = Mesa Ranger District PRD = Payson Ranger District, PVRD = Pleasant Valley Ranger District, TBRD = Tonto Basin Ranger District.	

SPECIES/HABITAT EVALUATION

Methodology for Analysis

The center point location of each potential wildlife water development site was located by use of handheld global positioning system (GPS) unit according to coordinates provided by AGFD. A 4-acre buffer was established centered on the point locations. The 4-acre buffer polygon measuring approximately 417 feet on each side of the center point was downloaded into the GPS unit prior to conducting the survey. Photographs of the project area were taken from the center point location oriented on magnetic north and then south. An estimate of tree, shrub and grass cover, dominant vegetation and general landform and natural vegetation type was recorded. Logan Simpson biologist Richard Remington conducted a pedestrian survey of each development site, walking an approximate 60-foot-wide north-south transect covering the entire 4-acre survey plot (seven transect lines per 4-acre survey plot). Taxa encountered during the transects were recorded to compile a general vegetation list occurring in each survey plot. In addition, sensitive species (if observed) and habitat potential for TES species was recorded.

Whenever possible, species-specific habitat data and the presence or absence of TES species or potential habitat for TES species documented during the pedestrian survey of each wildlife water development site was utilized to analyze potential effects of the proposed action.

EFFECTS

This section describes general potential impacts to TES species and describes long-term benefits against any short- or long-term adverse effects of the proposed project.

Direct effects to woodland and grassland habitats within each wildlife water development site would include the excavation of a 5-foot deep by 18 foot wide by 45-foot long hole excavated for the installation of four 4-foot deep by 8-foot wide by 13-foot long 2,500 gallon polyethylene storage tanks. Additional permanent loss of vegetation would occur from the installation of a 3-foot deep by 5-foot wide by 8-foot polyethylene walk-in trough and a 40- to 60-foot-long hole for placement of the pipeline leading to the trough from the tank. The disturbance to vegetation within each wildlife water catchment site is estimated to be 0.5 acre.

Direct effects from vegetation loss to desert grassland habitat would occur in the Tangle Creek Tank project area, and to the pinyon-juniper grassland in the Long Mesa Tank 3 project area, while effects to interior chaparral PNVNT would occur at the Misery Tank, KC Tank, Crouch Tank, Mudslinger Tank, and Topsy Tank. The proposed action would result in an inconsequential loss of vegetation from each of these PNVNTs represented within the Cave Creek Ranger District and the Tonto NF.

Indirect effects would occur during the duration of the project (14 days or less), from vehicles and equipment utilized during construction and from periodic maintenance inspections. During construction vehicles and machinery would be present. Construction and maintenance activities would normally occur on weekdays during daylight hours. Increased human activity and noise associated with development activities could have a minor, short-term negative impact on wildlife in the area during construction. Some wildlife may temporarily leave the project area during development activities, possibly for the duration of the project, approximately 14 days at each site. Access to each site during maintenance inspections would normally include the use of vehicles and hand tools for routine maintenance activities and would be short in duration and conducted during daylight hours on week days.

Long term benefits to TES species would occur from the presence of a permanent source of free water post construction of the seven new wildlife water catchment areas.

Cumulative effects are those effects of future nonfederal (state, tribal, local, or private) actions that are reasonably certain to occur in the project area. Lands in the project areas are solely federal (Tonto NF) lands. Future federal actions unrelated to the proposed project are not considered cumulative because they require separate consultation pursuant to Section 7 of the ESA (USFWS and NMFS 1998).

Species Evaluation

Table 6 includes species listed under the ESA that may potentially occur with the Tonto NF (US Forest Service 2015). The proposed project is limited in the area that would be affected from the construction and maintenance of the seven wildlife water catchments. Indirect effects from construction activities would be localized and short in duration. Maintenance activities would be sporadic over time and in short

duration. Therefore, considering direct, indirect, and cumulative effects, the proposed project would have no effect to ESA listed species or their habitats.

Table 6: Federally Listed Species Effects Determinations

Species	Habitat, elevation, and relevant biology	Rangewide	Forestwide ¹	Effects Determination
Mammals				
Bat, lesser long-nosed (endangered)	Desert scrub habitat with agave and columnar cacti present as food plants. 1,600 to 11,500 ft.	Ranged from central Arizona and southwest New Mexico through much of Mexico to El Salvador.	There are no confirmed reports of lesser long-nosed bats from the Tonto NF. The closest confirmed lesser-long nosed roost is a cave on tribal lands south of Casa Grande about 65 miles away from Tonto National Forest.	Agave is present in project areas. Elevations range from 2,967 to 5,042 amsl. The Tangle Creek Tank is located in semi-desert grassland. Project area is outside the known species distribution. The proposed action will have no effect to lesser long-nosed bat.
Ocelot (endangered)	Desert scrub communities with high canopy and vegetation cover in Arizona. Prey includes rabbits, small rodents, and birds. Universal component is presence of dense cover.	Ranged over much of Texas, southeastern Arizona, the west and east coasts of Mexico, and Central and South America, with individuals found as far south as northern Argentina. Individuals are still found in southern Texas, Mexico, South and Central America in suitable habitat.	No habitat occurs in Tonto NF. However, ocelots incidentally occur in Tonto NF. A vehicle hit and killed an ocelot on State Route 60 about 2.5 miles northeast of Oak Flat Campground in 2010. Lab analysis of the carcass did not indicate that the ocelot was domesticated.	Project areas are open desert grassland or juniper grassland habitats with low cover. The proposed action will have no effect to ocelot.
Birds				
Flycatcher, southwestern willow (endangered)	Cottonwood/willow and tamarisk vegetation communities along rivers and streams less than 8,500 ft.	Arizona, southern California, New Mexico, southern Nevada, southern Utah, southwestern Colorado, and extreme northern Mexico.	All districts. Breeds in CCRD, GRD, PRD, TBRD.	No riparian habitat occurs within the project areas. The proposed action will have no effect to southwestern willow flycatcher.
Flycatcher, southwestern willow, critical habitat (designated)	N/A	N/A	CCRD, GRD, PRD, TBRD.	No designated critical habitat or primary constituent elements for the southwestern willow flycatcher occur within the project areas. The proposed action will have no effect to southwestern willow flycatcher designated critical habitat.
Owl, Mexican spotted (threatened)	Nests in canyons and dense forests with multilayered foliage structure. 4,100 to 9,000 ft.	Southern Utah and Colorado south to isolated locations in western Texas and in the Sierra Madre in Mexico.	GRD, MRD, PRD, PVRD, TBRD.	Project areas are open desert grassland or juniper grassland habitats with low slopes, single story tree canopy with no canyon or dense forest sands. The proposed action will have no effect to Mexican spotted owl.
Owl, Mexican spotted, critical habitat (designated)	N/A	N/A	All districts. Upper Gila Mountain Recovery Unit and the Basin and Range-West Recovery Unit are within Tonto NF.	No designated critical habitat or primary constituent elements for the Mexican spotted owl occur within the project areas. The proposed action will have no effect to Mexican spotted owl designated critical habitat
Rail, Yuma clapper (endangered)	Fresh water and brackish marshes less than 4,500 ft.	Southwestern U.S.	CCRD, MRD, TBRD. Tonto Creek at Roosevelt Lake (TBRD), Verde River south of Needle Rock (CCRD), Goldfield (MRD). Tonto NF is at the fringe of this specie's distribution.	No marsh habitat occurs within the project areas. The proposed action will have no effect to Yuma clapper rail.

Species	Habitat, elevation, and relevant biology	Rangewide	Forestwide ¹	Effects Determination
Cuckoo, yellow-billed (threatened)	Dense low elevation riparian forested habitat consisting of mature trees (typically cottonwood) with a vegetative understory component of shrubs and smaller young trees.	Historically known from parts of the 12 states west of the continental divide including: WA, OR, CA, ID, NV, UT, AZ, and parts of MT, WY, CO, NM, and TX.	CCRD, MRD, GRD, AND TBRD. Verde, Lower Salt, Tonto Creek, Pinto Creek.	No riparian habitat occurs within the project areas. The proposed action will have no effect to yellow-billed cuckoo
Cuckoo, yellow billed critical habitat (proposed)	N/A	N/A	CCRD- Agua Fria River, portions of Indian Creek, Silver Creek, Tonto Creek above Horseshoe Reservoir	No proposed critical habitat within the project areas. The proposed action will have no effect to yellow-billed cuckoo proposed critical habitat
Amphibians/Reptiles				
Frog, Chiricahua leopard (threatened)	Streams, rivers, backwaters, ponds, and stock tanks that are mostly free from introduced fish, crayfish, and bullfrogs. 3,300 to 8,900 ft.	The Chiricahua leopard frog was historically an inhabitant of cienegas, pools, livestock tanks, lakes, reservoirs, streams, and rivers in central, east-central, and southeastern Arizona (Santa Cruz, Apache, Gila, Pima, Cochise, Greenlee, Graham, Yavapai, Coconino, and Navajo counties); west-central and southwestern New Mexico; The Chiricahua leopard frog is now often restricted to springs, livestock tanks, and streams in the upper portions of watersheds where nonnative predators either have yet to invade or habitats are marginal.	PRD, PVRD. Extirpated from GRD.	No aquatic habitat occurs within the project areas. Not known to occur in the Cave Creek Ranger District Stock ponds within the project vicinity would not be affected by the proposed project. The proposed action will have no effect to Chiricahua leopard frog.
Frog, Chiricahua leopard, critical habitat (designated)	N/A	N/A	PRD, PVRD. All critical habitat within Tonto NF is within the Recovery Unit 5. There are 2 management units consisting of Unit 24 (Crouch, Gentry, and Cherry Creeks, and Parallel Canyon) and Unit 25 (Ellison and Lewis Creeks).	No designated critical habitat for Chiricahua leopard frog occurs in the project areas (USFWS 2012b). The proposed action will have no effect to Chiricahua leopard frog designated critical habitat.
Gartersnake, northern Mexican (threatened)	Riparian obligate species which chiefly occurs in the following general habitat types: wetlands, cienegas, stock tanks, large river riparian woodlands, and streamside gallery forests from 130 to 8,497 feet in elevation.	Arizona and New Mexico	All	No aquatic habitat occurs within the project areas. The proposed action will have no effect to northern Mexican gartersnake.
Gartersnake, northern Mexican critical habitat (proposed)		Arizona and New Mexico	Verde River Subbasin and Agua Fria River Subbasin and Tonto Creek Subbasin	No proposed critical habitat for the Northern Mexican gartersnake occurs in the project areas (USFWS 2013a). The proposed action will have no effect to proposed northern Mexican gartersnake critical habitat.
Gartersnake, narrow headed (threatened)	Riparian obligate species, found along and below the Mogollon Rim at elevations ranging from 2,200 to 8,000 feet. Strongly associated with clear, rocky streams using predominantly pool and riffle habitat that includes cobbles and boulders.	Arizona and New Mexico	CCRD, MRD, GRD, TBRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to narrow headed gartersnake.
Gartersnake, narrow headed critical habitat		Arizona and New Mexico	Verde River Subbasin and Tonto Creek Subbasin unit	No proposed critical habitat for the narrow headed gartersnake occurs in the project areas (USFWS

Species	Habitat, elevation, and relevant biology	Rangewide	Forestwide ¹	Effects Determination
(proposed)				2013a). The proposed action will have no effect to proposed narrow headed gartersnake critical habitat
Tortoise, Morafka's (candidate)	Inhabits rocky slopes and bajadas of Mojave and Sonoran desert scrub habitats at elevations ranging from 500 to 5,300 feet.	Southern and western Arizona	CCRD, GRD, MRD, TBRD	Project areas are open desert grassland or juniper grassland habitats (Burroughs 1993, USFWS 2010). The proposed action will have no effect to Morafka's tortoise
Fish				
Chub, Gila (endangered)	Pools, springs, backwaters, and streams. 2,000 to 5,500 ft.	Occurs in New Mexico, Arizona, and northern Mexico.	Extirpated. Formerly found in Silver Creek (CC RD), Mineral Creek (GRD), and TBRD. Augmentations planned for Silver Creek.	No aquatic habitat occurs within the project areas. The proposed action will have no effect to the Gila chub.
Chub, Gila, critical habitat (designated)	N/A	N/A	CCRD, GRD.	No designated critical habitat for Gila chub occurs within the project area. The proposed action will have no effect to the Gila chub designated critical habitat.
Minnow, loach (threatened)	Benthic species of small to large perennial streams with swift shallow water over cobble and gravel. Recurrent flooding and natural hydrograph important. Less than 8,000 ft.	Loach minnow is endemic to the Gila River basin in Arizona, New Mexico, and Sonora, Mexico.	Extirpated. However, AGFD stocked 1,500+ fish in Fossil Creek in the late 2000s.	No aquatic habitat occurs within the project areas. The proposed action will have no effect to loach minnow.
Minnow, loach, critical habitat (designated)	N/A	N/A	CCRD, PRD.	No designated critical habitat for loach minnow occurs within the project area (USFWS 2012a). The proposed action will have no effect to designated loach minnow critical habitat .
Pikeminnow, Colorado (endangered; experimental nonessential)	Warm, swift, turbid mainstem rivers. Prefers eddies and pools less than 4,000 ft.	Endemic to the Colorado River basin. Historical range was from Wyoming, Colorado, Utah, Nevada, California, New Mexico, and Baja California Norte and Sonora, Mexico.	CCRD, GRD, TBRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to Colorado pikeminnow.
Pupfish, desert (endangered)	Shallow springs, small streams, and marshes. Tolerates saline and warm water less than 4,000 ft.	Once widely distributed (below 5,000 ft), though distribution was patchy. Originally found in California, Arizona in the Gila and lower Colorado River basins in Arizona, in Baja California Norte, and Sonora, Mexico.	MRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to desert pupfish.
Spikedace (threatened)	Medium to large perennial streams with moderate to swift velocity waters over cobble and gravel substrate. Recurrent flooding and natural hydrograph important to withstand invading exotic species less than 6,000 ft.	Spikedace are native to the Gila River basin in Arizona, New Mexico, and Sonora, Mexico. The species is declining rangewide, however is still found in the Verde River (very rare), Eagle Creek, Aravaipa Creek, and the Gila River in New Mexico.	Extirpated. However, AGFD stocked 1000 spikedace into Fossil Creek between 2007 and 2009.	No aquatic habitat occurs within the project areas. The proposed action will have no effect to spikedace.
Spikedace, critical habitat (designated)	N/A	N/A	CCRD, PRD, PVRD, TBRD.	No designated critical habitat for spikedace occurs within the project area (USFWS 2012a). The proposed action will have no effect to designated spikedace critical habitat.
Sucker, razorback (endangered)	Riverine and lacustrine areas, generally not in fast	Razorback sucker are endemic to the	CCRD, TBRD, GRD. In addition, AGFD stocked	No aquatic habitat occurs within the project areas.

Species	Habitat, elevation, and relevant biology	Rangewide	Forestwide ¹	Effects Determination
	moving water and may use backwaters less than 6,000 ft.	Colorado River basin formerly ranging from Wyoming and Colorado southward through Utah into Arizona, California, Nevada, New Mexico. Razorback sucker also occurred in Baja California Norte and Sonora, Mexico.	razorback suckers in Fossil Creek in the late 2000s.	The proposed action will have no effect to razorback sucker.
Sucker, razorback, critical habitat (designated)	N/A	N/A	CCRD, GRD, PRD, TBRD.	No designated critical habitat for razorback sucker occurs within the project areas. The proposed action will have no effect to designated razorback sucker critical habitat.
Topminnow, Gila (endangered)	Inhabits slow moving low gradient streams, springs, backwaters below 4,000 ft.	Historically common in Arizona, New Mexico, and western Sonora.	CCRD, GRD, MRD, TBRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to Gila topminnow.
Chub, headwater (candidate)	Occupies cool to warm waters in middle to headwater reaches of mid-sized streams of the Gila River basin, and are associated with deep, near shore pools adjacent to swift riffles and runs, and near obstructions	Once widespread throughout the Tonto River Basin, Verde River; Gila River Basin in Ash creek Beaver and Taylor creek. Currently found in four drainage basins, Verde River, Tonto Creek, San Carlos River, and upper Gila River	CCRD, TBRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to headwater chub.
Chub, roundtail (candidate)	Medium-sized streams in large, deep pools often associated with cover such as undercut banks or deep places created by trees or rocks at elevations of 3,000–6,700 feet.	Distribution is highly fragmented in the northern and eastern parts of the Gila River basin in Arizona and New Mexico.	TBRD, PRD, PVRD	No aquatic habitat occurs within the project areas. The proposed action will have no effect to roundtail chub.
Plants				
Cliffrose, Arizona (endangered)	Nutrient-deficient, calcareous limy-tuff soils derived from Tertiary lacustrine deposits. 2,100 to 2,700 ft.	Central Arizona.	CCRD. Near Horseshoe Lake.	No Arizona cliffrose or calcareous soil was observed during site survey. The project areas are outside the known distribution. The proposed action will have no effect to Arizona cliffrose.
Hedgehog, Arizona (endangered)	Interior chaparral and madrean evergreen woodland communities. Parent materials of igneous origin, primarily Schultze Granite and Apache Leap Tuff (Dacite); plants occurring on the Pinal schist and Pioneer formations are found only in proximity to the preferred parent materials and where the formations are expressed as exposed bedrock. 3,300 to 5,700 ft.	Central Arizona, from Pinal and Gila counties. This includes the Pinal, Dripping Springs, Superstition and Mescal mountains, Top of the World. It also can be found in the highlands between Globe and Superior.	GRD, MRD. East of Pinto to east of Superior, north to the Superstition Wilderness and west to Rogers Trough. Also on Apache Peak north of Globe.	No Arizona hedgehog was observed during site survey. The project areas are outside the known distribution. The proposed action will have no effect to Arizona hedgehog .
Other species				
Eagle, bald	Large trees or cliffs near water (reservoirs, rivers, and streams) with abundant prey. Elevation varies.	North America. 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.	Breeding pairs in CCRD, GRD, MRD, TBRD. Verde and Salt Rivers, Roosevelt Lake. Wintering habitat in CCRD, GRD, MRD, PRD, and TBRD.	No aquatic habitats that would serve as foraging areas or cliffs or large trees that would provide nesting habitat is located within the project areas. The proposed action would not result in the take or disturbance of bald eagles.
Eagle, golden	They are usually found in open country, in prairies,	Contiguous North America, Canada	All districts.	Foraging habitat for golden eagles occur in the

Species	Habitat, elevation, and relevant biology	Rangewide	Forestwide ¹	Effects Determination
	arctic and alpine tundra, open wooded country and barren areas, especially in hilly or mountainous regions. They nest on rock ledges, cliffs or in large trees. 4,000 to 10,000 ft.	south to central Mexico, Northern Russia, Siberia, British Isles, Northern Africa, Asia minor, Persia, southern Tibet, Korea and Japan.		project areas. Limited area impacted and duration of construction activity would not limit foraging habitat for golden eagles. The proposed action would not result in the take or disturbance of golden eagles.
¹ CCRD - Cave Creek Ranger District; GRD - Globe Ranger District; MRD - Mesa Ranger District; PRD - Payson Ranger District; PVRD - Pleasant Valley Ranger District; TBRD - Tonto Basin Ranger District				

Table 7: Forest Sensitive Species Effects Determinations

Table 7 compares the known habitat and distribution for each Forest sensitive species within the project areas to the proposed action areas. For all Forest sensitive species neither the habitat nor the species occur within the project area and would not be impacted by this project. Therefore, this project is not likely to trend toward listing any Regional Forester sensitive species on the Tonto National Forest

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
Mammals				
Bat, Allen's big-eared (lappet-browed)	Ponderosa pine, pinyon-juniper, Mexican woodland and riparian areas of sycamores, cottonwoods and willows. Occur near rocks, such as cliffs or large boulders. 1,320 to 9,800 ft.	Central highlands of Mexico from the Distrito Federal, San Luis Potosi, Tamaulipas and Durango northward into west-central New Mexico to the Colorado River Valley, Arizona. Most Arizona specimens have been taken from the southern Colorado Plateau, the Mogollon Rim and adjacent mountain ranges.	PVRD, TBRD. Sierra Ancha (1992, 1997; TBRD), Sierra Ancha (1993; PVRD)	Woodland habitat is not adjacent to riparian areas, not documented in CCRD. Neither the habitat nor the species occur within the project area and would not be impacted by this project.
Bat, pale Townsend's big-eared	In Arizona, summer day roosts are found in caves and mines from desertscrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. In winter, they hibernate in cold caves, lava tubes and mines mostly in uplands and mountains from the vicinity of the Grand Canyon to the southeastern part of the state. 550 to 7,520 ft.	Central highlands of northern Mexico and southern California to the Edwards Plateau of Texas, with isolated populations in the Black Hills of South Dakota and the Gypsum Hills of south-central Kansas, western Oklahoma and northwestern Texas. Widespread in Arizona.	GRD, MRD, PVRD, TBRD. Sorghum Hill (PRD), 1 mile SE of Tejano spring (MRD), middle water spring (TBRD), Sierra Ancha (TBRD), near wolf spring (PVRD).	No roost sites within the project area not documented in CCRD. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Bat, spotted	Varied. In Arizona mostly collected in dry, rough desertscrub with a few captured or heard in ponderosa pine forest. 110 to 8,670 ft.	Locally distributed throughout central western North America from southern British Columbia and Montana, south through California and Big Bend, Texas to Durango and Queretaro in Mexico. Specimens from near Yuma, Roll, Maricopa Junction, Tempe and Littlefield.	No records.	No roost sites within the project area not documented in CCRD. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Bat, western red bat	Riparian and other wooded areas. Roosts by day in trees. Summer roosts usually in tree foliage, sometimes in leafy shrubs or herbs. Often found in trees of fruit orchards. May also roost in saguaro boots and occasionally in cave-like situations. Although they generally avoid caves and buildings during both summer/winter. This species primarily roosts in	Extreme southern Canada through the western United States south to Panama and South America.	CCRD, GRD, MRD, PVRD.	No riparian habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
	cottonwood trees.			
Birds				
Falcon, American Peregrine	Optimum peregrine habitat is generally considered to be steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance. 400 to 9,000 ft.	Worldwide except Anartica. Breeds in Arizona wherever sufficient prey is available near cliffs. Areas of spectacular cliffs such as the Mogollon Rim, Grand Canyon and Colorado Plateau contain most of Arizona's breeding peregrines.	All districts. Along the Mogollon Rim, in the Sierra Ancha Mountains, and the Mazatzal Mountains.	No nesting habitat in project areas, foraging habitat for peregrine falcons may occur in the project areas. Limited acres of habitat loss and duration of construction activity would not limit foraging habitat for peregrine falcons. American peregrine falcon would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Flycatcher, sulphur-bellied	Nests in drainages with tall, broadleaf riparian woodlands with Arizona sycamore. They also occur in cool canyons with Arizona alder, Gambel's oak, box elder, and very scattered conifers. 4,500 to 6,000 ft.	Breed in southeastern Arizona and northeastern Mexico south to northern Costa Rica. They winter in northern South America.	PRD, PVRD. Sierra Ancha; an individual was observed investigating tree cavities near the base of the Mogollon Rim along Christopher Creek; a calling bird occurred along Fossil Creek west of Strawberry.	No riparian habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Goshawk, northern	Occupies primarily ponderosa pine, mixed-species, and spruce-fir habitats in the southwest and prefers mature conifer stands with dense canopies for nesting.	Breeding range: Holarctic; northern hemisphere from timberline in Alaska and Canada south to Mexico and northwestern Connecticut and from timberline in Scandinavia and Siberia south to Morocco, Iran, Tibet and Japan.	PRD, PVRD. Pinal mountains, Mount Ord and other portions of the Sierra Anchas may also support goshawks.	No dense conifer stands in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Junco, yellow-eyed	Occupies cool, wet, and shaded forest with scattered grass clumps, small shrubs, forbs ferns, downed trees, and an abundance of leaf litter in which to forage. Occurs in Madrean pine-oak forests with ponderosa pine, evergreen oaks, alligator juniper, Arizona madrone. Other habitat includes cool shaded canyons with Douglas fir, white fir, ponderosa pine, and aspen. Regularly encountered nesting near heavily used sites such as campgrounds, picnic areas, and trailhead parking areas. Relatively tame and approachable. 5,900 to 10,000 ft.	Resident from southeastern Arizona and southwestern New Mexico, south through the higher elevations of Mexico to central Oaxaca and locally to Guatemala.	GRD. Pinal mountains.	No suitable habitat present in project areas outside known elevation. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Reptiles				
Lizard, Bezy's night	Rugged, rocky slopes and boulder fields within the Arizona upland Sonoran desertscrub and interior chaparral communities. This crevice-dweller frequents large outcroppings and large boulder clusters and is occasionally encountered in and under plant debris such as dead <i>Dasyllirion</i> . 2,400 to 5,800 ft.	Arizona endemic is found in a small chain of mountain ranges in central Arizona.	CCRD, GRD, MRD, TBRD. Queen Creek Canyon (GRD), 1 mi east of Sugarloaf mountain (MRD), Sycamore Creek (MRD), 1 mi south of Tonto NM (TBRD).	No potential habitat occurs in project areas-final catchment location would avoid bolder outcrops and clusters for construction requirements. Due to habitat avoidance and limited amount of disturbance the proposed action, Bezy's night lizard would not be

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
				impacted by this project therefore is the proposed action not likely to result in a trend toward federal listing or loss of viability is not
Amphibians				
Frog, lowland leopard	Found in or near permanent waters with aquatic and herbaceous vegetation at elevations ranging from 480 to 3,500 ft.	Found in SE California, Arizona, New Mexico and Sonora, Mexico. The range has been much reduced throughout all its range.	All ranger districts	No permanent waters in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Frog, western barking	Habitat is rocky outcrops with some moisture. Elevation range from 4,200 to 6,200 ft.	Majority of the distribution of this species is in SE Arizona and North-Central Sonora, Mexico.	PVRD (old record, suspect), TBRD.	No moist soil areas in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Fish				
Sucker, desert	Occurs in desert streams at elevations of 1,000 ft to streams at 6,800 ft. During daytime desert sucker use pools and in evening move into riffles to feed.	Found from lower Colorado River tributaries downstream from the Grand Canyon in Arizona, Nevada, Arizona, and the Gila River basin in Arizona, New Mexico, and Sonora, Mexico.	All ranger districts	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Sucker, Sonora	Occurs in Salt and Verde River Systems below 6,500 ft. Sonora sucker use pools and slow moving runs. Adults move into riffles and margins at night to feed.	Sonora sucker are endemic to the upper Gila and Bill Williams rivers in Arizona, New Mexico, and Sonora, Mexico.	CCRD, MRD, TBRD, GRD	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Invertebrates				
Beetle, Parker's cyloopus riffle	Permanent, clean, slow moving small streams, with loose gravelly substrate and very little sand. 2,850 to 4,000 ft.	Yavapai County, Arizona, in spring fed Roundtree Canyon in Bloody Basin within the Tonto National Forest. Also occurs in Tangle Creek, also located in Bloody Basin.	CCRD. Roundtree Canyon.	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Caddisfly, a	This species is more or less restricted to the cooler spring-fed streams in mountainous regions.	Originally described from Chiapas, Mexico; but was recently found in Arizona from Gila to Yavapai Cos. (Gila Co.: Line Fossil Creek, Fossil Creek; Yavapai Co.: Beaver Creek, below outlet of Montezuma Well, unnamed stream	PRD. Fossil Creek, Forest Service Road 708	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
		at Ward Ranch).		proposed action is not likely to result in a trend toward federal listing or loss of viability.
Mayfly, a	Mexican species that was rediscovered in 2005 on Tonto National Forest since 1892 in Sonora Mexico in 1892.	Mexico (Sonora), California (San Bernardino Mountains, Riverside County), Arizona (Salt River Canyon, Gila County).	GRD. Salt River Canyon.	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Midge, netwing	Confined to areas in the immediate vicinity of rapidly flowing streams. Larvae and pupae occur on smoothed-faced rocks and boulders in swiftly moving torrential waters, often in waterfalls. >6,000 ft.	Ranging through the Cascades from central Oregon, south in the Sierra Nevada and Transverse Ranges of southern California, then reoccurring disjunctly in the highlands of southeastern Arizona.	PVRD. Workman Creek.	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Springsnail, fossil	Headspring and upper sections of the outflow. The genus <i>Pyrgulopsis</i> is generally found on rock or aquatic macrophytes in moderate current. 4,140 to 4,310 ft.	Spring near Strawberry, Gila County, along with Fossil Springs, Yavapai County, Arizona.	PRD.	No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Plants				
Agave, Hohokam	Gentle bajada slopes, benches or terraces above major drainages with prehistoric habitations and/or agricultural sites. 1,300 to 2,400 ft.	Found in wild from central Arizona to Sonora, Mexico.	CCRD, MRD, TBRD. Roosevelt Lake, Mazatzal and Sierra Ancha Mountains, and Tonto Basin.	Agave's located in project area classified as <i>Agave chrysantha</i> . The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Agave, Tonto basin	Cobbly and gravelly, deep and well-drained soils. South and southwest facing slope edges and atop benches, occasionally on northeast facing gentle slopes. 2,300 to 5,100 ft.	About 90 clones are known from Young, Arizona to San Carlos Reservoir, foothills of Mazatzal and Sierra Ancha mountains, the Sunflower areas, and near Oak Creek.	GRD, MRD, PVRD, TBRD. The greatest concentration of sites occurs along the south end of Tonto Creek near the northwest end of Roosevelt Lake in Tonto Basin.	Agave's located in project area classified as <i>Agave chrysantha</i> . The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Breadroot, Verde	This plant grows on white powdery gypseous limestone of Tertiary lakebed deposits where it occurs with several other rare plants adapted to this specialized habitat.	Limited distribution in northern Yavapai County and southern Coconino County.	No records in Tonto NF, but Tertiary Verde Formation occur in CCRD.	Not located in project areas during site specific surveys, outside known distribution. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
Buckwheat, Ripley wild	In Tertiary lakebeds on well-drained powdery soils derived from limestone, sandstone, or volcanic tuffs and ashes. Calcareous ridge tops or chalky carbonate Verde formations. 2,000 to 6,000 ft.	Known from five widely separated localities in central to northwestern Arizona.	CCRD. Horseshoe Lake and Chalk Mountain.	Not located in project areas during site specific surveys, no calcareous soils observed during site specific surveys. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Bugbane, Arizona	Forested areas near perennial streams, intermittent streams or seeps. Rich fertile soils, high in humus are typical. Surrounding vegetation is generally mixed conifer with an understory of deciduous shrubs and trees that is often dense and shady. This species is often the dominant understory species where found. Associated with high humidity in Arizona. 6,000 to 8,300 ft.	Central Arizona.	PVRD. Workman Creek and Cold Springs Canyon in the Sierra Ancha Mountains.	No riparian habitat within project area. No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Dock, Blumer's	Moist loamy soil adjacent to springs and flowing streams in open meadows or meadows with overstories. Also occurs in the drier headwaters. Surrounding forested areas are characterized by mixed conifer. It typically occurs in open, sunny locations, but can occupy more shaded sites. 6,500 to 11,500 ft.	Arizona, New Mexico and Mexico.	PRD, PVRD. Along Mogollon rim (PRD). In PVRD, Blumer's dock occurs in Rose, Workman, and Reynolds Creeks. And they also occur in Pueblo and Cold Springs Canyon.	No springs or moist soils areas in project areas. No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Fleabane, fish creek	Moist, sandy canyon bottoms associated with perennial streams. 2,250 to 3,500 ft.	Central Arizona. Fish Creek Canyon, Superstition Mountains, Maricopa County; and Turkey Creek and Oak Grove Canyon (Aravaipa Canyon tributaries), Galiuro Mountains, Graham County.	MRD. Fish Creek in the Superstition Mountains	No riparian habitat within project areas. No aquatic habitat in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Fleabane, Mogollon	Granite cliff faces, chaparral through pine forests. Rock crevices or ledges on boulders and vertical rock faces, usually in canyons. 3,500 to 7,000 ft.	Known mainly from the mountains of central Arizona, Gila County.	GRD, PRD, PVRD, TBRD. Its total range includes the Sierra Ancha, Mazatzal and Mescal Mountains, and Pine Creek in northern Gila County. Occurrence records include Tonto Creek and Houston Creek on the Payson district, Pine Creek on Tonto Natural Bridge State Park, and Sierra Ancha Mountains (Parker Creek, First Water Canyon, Devil's Chasm, Workman Creek, and one population at the south end of Sierra Ancha Experimental Forest). One location from the Superstition Mountains in Pinal County.	Fleabane observed during site specific surveys classified as <i>Erigeron divergens</i> . The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Groundsel, toumey	Most commonly found in oak chaparral, and sometimes in pine forest. 5,500 to 9,200 ft.	The variety toumeyii is only found in Arizona. Chiricahua and Huachuca mountains in Cochise County. Also reported	GRD. No HDMS records.	Not observed during site specific surveys, outside known distribution.

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
		from the Pinal Mountains in Gila County.		The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Mallow, Pima Indian	Mesic situations in full sun within higher elevation Sonoran Desert scrub, desert grassland, and Sonoran deciduous riparian forest. On rocky hillsides, cliff bases, lower side slopes and ledges of canyons among rocks, and boulders. Slopes can exceed 45 degrees. In riparian zones, it can occur on flat secondary terraces but typically not in canyon bottoms. 3,000 to 4,800 ft.	Known from 84 populations in 17 mountain ranges. Occurs in southcentral and southeastern Arizona. Range within Arizona includes the Superstitions, Santa Catalinas, Rincons, Silverbells, Tucson Mountains, Santa Ritas, Tumacacori, Little Shipp Wash and Cottonwood Creek near Bagdad, Sabino Canyon, and numerous mountain ranges within Pinal County. The majority of the Arizona populations are in the Santa Catalina Mountains.	MRD. Documented individuals occur along the northwestern boundary of the Superstition Wilderness.	Not observed during site specific surveys, no moist soil areas in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Milkwort, Hualapai	Desert grassland and juniper woodland. White outcroppings. 3,150 to 5,000 ft.	Central and west-central Arizona, in Yavapai and Mohave counties.	CCRD. Southwest of Horsehoe Lake.	Not observed during site specific surveys, no white calcareous soils in project areas. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Phlox, Arizona	Open exposed limestone-rocky slopes within pinyon-juniper woodlands and ponderosa pine-gambel oak communities. 3,500 to 7,800 ft.	Mainly in southern Coconino, Mohave, Navajo and Yavapai counties, but also found in Gila and Graham counties.	PRD. Christopher Creek.	Not observed during site specific surveys, no exposed limestone slopes in project area, outside known distribution The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Rockdaisy, fish creek	A narrow endemic with specific habitat requirements. It grows in very xeric habitat on very steep slopes, from cracks and crevices on cliff faces, large boulders and rocky outcrops in canyons and on buttes composed of Barnes conglomerate and Mescal limestone. Dripping Springs location is on quartzite. 2,025 to 3,800 ft.	Gila and Maricopa counties, Arizona. Near Tonto National Monument, Roosevelt Lake, and above Horse Camp Creek in the Sierra Ancha Mts. Not found at Fish Creek. Suspected throughout Superstition Mountains.	MRD, PVRD, TBRD. Roosevelt Lake Dam, and in the Sierra Ancha Mountains above Horse Camp Creek.	Not observed during site specific surveys, outside known distribution. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Rockdaisy, salt river (Gila)	Seeps on cliff faces, ledges and rock outcrops. 3,000 to 4,000 ft.	San Carlos Indian Reservation on the Salt River between Show Low and Globe.	Expected to occur in the Salt River Canyon	Not observed during site specific surveys, outside known distribution. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Root, Arizona alum	Shaded rocky slopes in humus soil near seeps, streams, and riparian areas of mountain ranges	Southeastern Arizona, New Mexico. Apache, Cochise, Gila, Graham, Greenlee, Navajo, Hidalgo.	CCRD, GRD, PRD, PVRD.	No riparian habitats in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
				trend toward federal listing or loss of viability.
Root, eastwood alum	Found on moist shaded slopes in ponderosa pine forests and canyons. 3,480 to 7,874 ft.	Endemic to central Arizona. Coconino County: Mogollon Rim near Telephone Ride, Oak Creek Canyon, and West Fork of Oak Creek Canyon. Gila County: Christopher Creek, Mogollon Rim south of Woods Canyon Lake, and Sierra Ancha. Maricopa County: New River Mountains. Yavapai County: Bradshaw and Mazatzal Mountains, Mingus Mountain, and Lime Creek.	CCRD, GRD, PRD, PVRD. Christopher Creek, Hunter Creek and Barnhardt Pass (PRD), Reynolds Creek (PVRD), Lime Creek and at the north end of the New River Mountains (CCRD).	No ponderosa pine habitat or moist soil areas in project area. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Sage, Galiuro (Aravaipa)	Upper floodplain terraces in shady canyon bottoms near streams in understory of mature sycamore, ash, walnut and mesquite. Alluvial benches in understory of sycamore walnut and cottonwood, not far from permanent water. Intermittent stream with good overstory and steep canyon walls. Spread across flood plain midlevel and higher terraces and pediment of canyon walls. 1,500 to 5,000 ft.	Southcentral Arizona.	MRD, PVRD. Devil's Chasm and PB Creek in the Sierra Anchas. Fish Creek in Superstition Mountains.	No riparian habitats within project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability.
Sandwort, Mt. Dellenbaugh	Occurs mainly in oak and pine forests. Also found in open pine and pine-pinyon woodlands, and among junipers. 5,500 to 9,000 ft.	North and north-central Arizona in Coconino, Mohave, and Yavapai counties, and possibly Gila County.	No records. However, one occurs at the head of Deadman's Canyon in Tonto National Monument.	Not observed during site specific surveys, outside elevation range and known distribution. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Sedge, Chihuahuan	North and northwest-facing slopes in wet soils in streambeds, wet meadows, cienegas, marshy areas, shallower draws in pine-oak forest and riparian woodland. It is often associated with pine oak forests and riparian woodlands. 1,100 to 8,000 ft.	Chiricahuas, Huachucas, Pinalenos, Santa Catalinas, San Luis Mountains, Rincons, Atascosas, Santa Ritas, and along the Sant Cruz River and San Bernardino Valley.	PVRD. Reynolds Creek in the Sierra Ancha Mountains.	No riparian habitats in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Sedge, Cochise or Arizona giant	Southeast-facing, often shaded exposures in moist soil near perennially wet springs and streams. It is typically found in wet alluvial soil, sand and gravels, associated with aquatic/riparian woodlands or oak-pinyon woodlands.	Chiricahuas, Dragoons, Galiuros, Santa Ritas, Atascosa Mountains, Hieroglyphic Mountains, Aravaipa Canyon, and the Huachucas.	CCRD. Only documented case about 1 mile southwest of Tangle Peak, and it is associated with Tangle Creek.	No springs, moist soil, or riparian habitats in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Snapdragon, mapleleaf false	Occurs on rock overhangs, on shaded cliffs and rock ledges. 1,800 to 3,350 ft.	Endemic to Maricopa and Pinal counties, in south-central Arizona, including Superstition Mts. (Pinal County), Pinal Mts. (Maricopa Co.), above Canyon Lake (Maricopa Co.), near Horse Mesa Dam (Maricopa Co.).	MRD. Horse Mesa Dam road (Salt River), Fish Creek Hill, Goldfield Mountains, Canyon Lake, and numerous localities in the Superstition Mountains including Hewitt Ridge Canyon, Fish Creek Canyon, La Barge Canyon, Bluff Spring Canyon, Peralta Canyon, and Tortilla Creek.	No rock overhangs or shaded cliffs in project areas, outside known distribution. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability

Species	Habitat, Elevation, and Relevant Biology	Rangewide	Forestwide ¹	Effects Determination
Vetch, horseshoe deer	Soil endemic on late Tertiary lacustrine deposits of interbedded white limestone and ash flows within the Sonoran desert. 2,100 ft.	Known only from the Horseshoe Reservoir area along the lower Verde River.	CCRD. Southwest of Horseshoe Lake.	Not observed during site specific surveys, outside known distribution. The species was not documented within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
Woodfern, Aravaipa	In moist soil in the shade of boulders in mesic canyons. On riverbanks, seepage areas, and meadow habitats. 2,220 to 4,500 ft.	Arizona, southwestern California to western Mexico. In Arizona: Coconino, Maricopa, Pima, Pinal and Yavapai counties.	No records. However, there is a record 2.5 miles northwest of Globe, AZ.	No moist soil mesic canyons in project areas. Neither the habitat nor the species occur within the project area and would not be impacted by this project therefore the proposed action is not likely to result in a trend toward federal listing or loss of viability
¹ CCRD - Cave Creek Ranger District; GRD - Globe Ranger District; MRD - Mesa Ranger District; PRD - Payson Ranger District; PVRD - Pleasant Valley Ranger District; TBRD - Tonto Basin Ranger District				

LIST OF PREPARERS

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Determinations approved by:

/s/

Date

Cave Creek District Biologist – Tonto National Forest

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APPENDIX A

Project Area Photographs



Photograph 1: Misery Tank Wildlife Water site looking North



Photograph 2: Misery Tank Wildlife Water site looking South



Photograph 3: KC Tank Wildlife Water site looking North



Photograph 4: KC Tank Wildlife Water site looking South



Photograph 5: Crouch Tank Wildlife Water site looking North



Photograph 6: Crouch Tank Wildlife Water site looking South



Photograph 7: Mudslinger Tank Wildlife Water site looking North



Photograph 8: Mudslinger Tank Wildlife Water site looking South



Photograph 9: Topsy Tank Wildlife Water site looking North



Photograph 10: Topsy Tank Wildlife Water site looking South



Photograph 11: Topsy Tank-2 Wildlife Water site looking North



Photograph 12: Topsy Tank-2 Wildlife Water site looking South



Photograph 13: Tangle Creek Tank Wildlife Water site looking North



Photograph 14: Tangle Creek Tank Wildlife Water site looking South



Photograph 15: Long Mesa Tank 1 Wildlife Water site looking North



Photograph 16: Long Mesa Tank 1 Wildlife Water site looking South



Photograph 17: Long Mesa Tank 2 Wildlife Water site looking North



Photograph 18: Long Mesa Tank 3 looking North

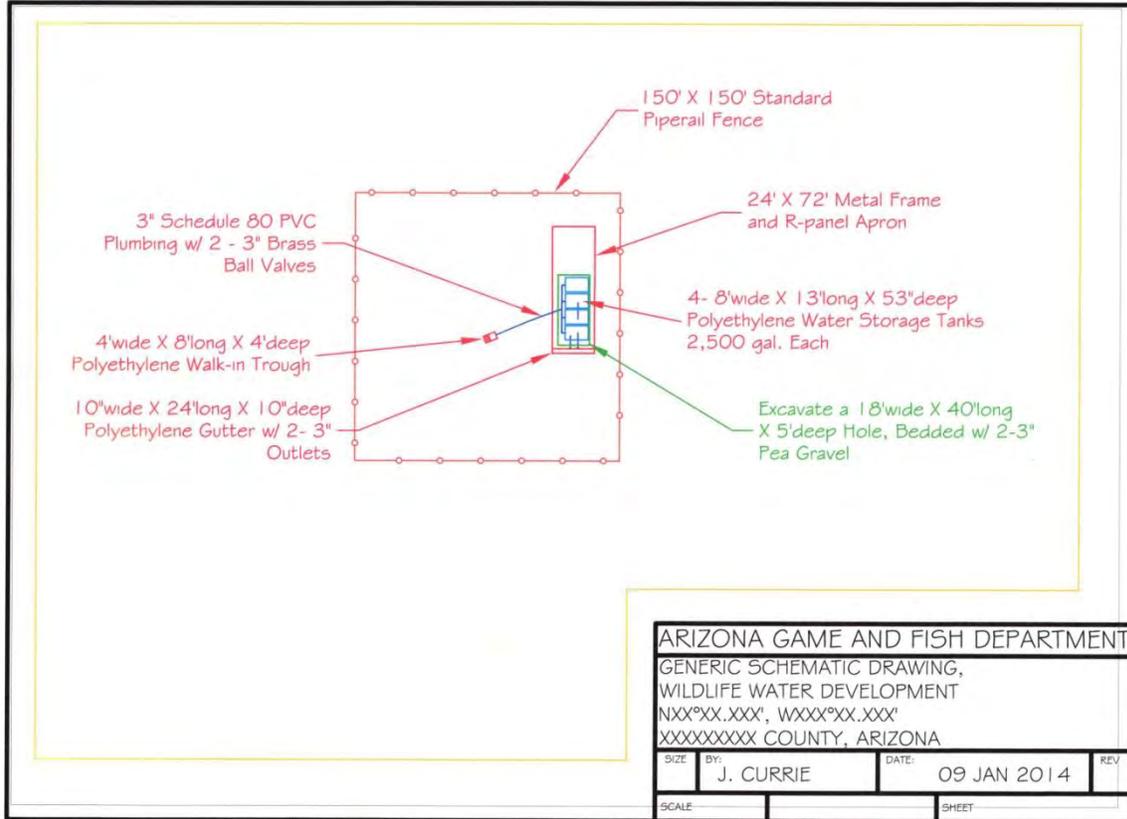


Photograph 19: Long Mesa Tank 3 looking South

APPENDIX B

Generic Wildlife Water Catchment and Fencing Design

Updated Generic Water Catchment Design

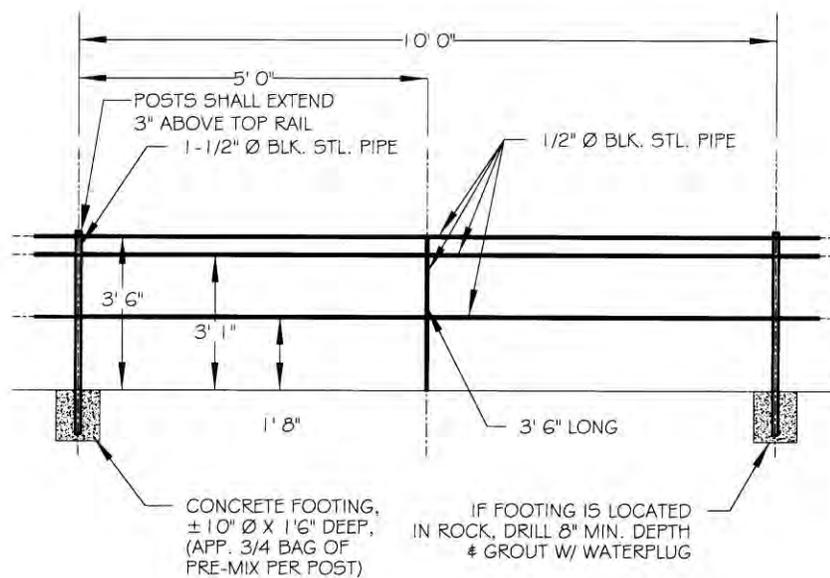


ARIZONA GAME AND FISH DEPARTMENT			
GENERIC SCHEMATIC DRAWING, WILDLIFE WATER DEVELOPMENT NXX°XX.XXX', WXXX°XX.XXX' XXXXXXXXXX COUNTY, ARIZONA			
SIZE	BY:	DATE:	REV
	J. CURRIE	09 JAN 2014	
SCALE		SHEET	

Regular duty fence design

NOTES:

- 1) ALLOW POSTS TO SET PRIOR TO WELDING RAILS.
- 2) WELD ALL POSTS AND STAYS TO RAILS.
- 3) WELD ALL RAILS TO SAME SIDE OF POST (NO OFF-SETS).
- 4) PRE-CUT 1 1/2" POST TO 63" LENGTH.
- 5) TOP OF 1/2" STAYS WELDED LEVEL AND SMOOTH TO TOP RAIL.



BY:	DATE:	DETAIL NO.	REV. NO.
CBG	5/17/2012	071	
TITLE			
REGULAR DUTY PIPE-RAIL ENCLOSURE FENCE			