

Decision Record

Mesquite Well #433 Water Catchment Relocation & Construction

DOI-BLM-AZ-P040-2011-004-EA

Decision

It is my decision to approve the *Construction and relocation of a water catchment in the Sonoran Desert National Monument— Mesquite Well #433—* as described in the Proposed Action of the Environmental Assessment DOI-BLM-AZ-P040-2011-004-EA.

Rationale for Decision

Construction and relocation of the Mesquite Well in the Sonoran Desert National Monument (SDNM) represents the best attempt to decrease impacts on cultural resources at an existing water source while still providing a reliable water source for wildlife in the SDNM. It also provides the opportunity to enhance our natural and cultural heritage through the protection of a significant cultural resource on the SDNM.

The relocation and construction of the Mesquite Well would continue to provide a reliable water source for wildlife in the Sonoran Desert where water is a scarce commodity desperately needed by wildlife species in the area. The relocation would also reduce current and future impacts to a known cultural site. Currently the site is being impacted by routine water hauling to the existing water source, periodic checks on the water source and maintenance activities of the water source by vehicles.

Public Involvement

A visit to the proposed and existing catchment locations was conducted on January 17, 2008. Members of the Arizona Zoological Society, Sierra Club, Wilderness Society, Arizona Wilderness Coalition, Arizona Bighorn Sheep Society, Arizona Game and Fish Department (AGFD), SWCA Environmental Consultants, and the Bureau of Land Management (BLM) attended the meeting. Representatives of the AGFD and BLM discussed the proposed action with attendees as well as the reasons for the proposed action (relocation) of the catchment.

The alternative selected for implementation reflects extensive input from the groups and individuals involved in the planning process for this project.

Alternatives Considered

One alternative—the No Action— was considered, in addition to the proposed action alternative. Under the No Action alternative, AGFD would not build the proposed water catchment and would discontinue hauling water to the existing catchment. The existing Mesquite Well catchment would no longer provide a reliable year-round water supply, and wildlife in the area would rely solely on naturally occurring seasonal water sources.

Wildlife populations have come to depend on water sources such as the existing catchment at Mesquite Well. Not replacing these catchments and not continuing to haul water to fill them would likely result in a reduced wildlife population size in the Sand Tank Mountains. This alternative does not meet the purpose and need of the project; therefore, it was not carried forward for further analysis.

Appeal Opportunity

This decision may be appealed to the Interior Board of Land Appeals, Office of the Secretary, in accordance with the regulations contained in 43 CFR, Part 4. Your notice of appeal must be filed in this office, located at 21605 North 7th Avenue, Phoenix, Arizona, 85027, within 30 days from receipt of this decision. The appellant has the burden of showing that the decision appealed from is in error.

If you wish to file a petition (request) pursuant to regulation 43 CFR Part 4.21(b) for a stay (suspension) of the effectiveness of this decision during that time that your appeal is being reviewed by the Board, the petition for a stay must accompany your notice to appeal. A petition for a stay is required to show sufficient justification based on the standards listed below. Copies of the notice of appeal and the petition for a stay must also be submitted to the Interior Board of Land Appeals and to the appropriate Office of the Solicitor (see 43 CFR 4.413) at the same time the original documents are filed with this office. If you request a stay, you have the burden of proof to demonstrate that a stay should be granted.

Standards for Obtaining a Stay

Except as otherwise provided by law or other pertinent regulation, a petition for a stay of a decision pending appeal shall show sufficient justification based on the following standards:

1. The relative harm to the parties if the stay is granted or denied,
2. The likelihood of the appellant's success on the merits,
3. The likelihood of immediate and irreparable harm if the stay is not granted,
4. Whether the public interest favors a granting the stay.

_____/s/_____
Rich Hanson, Monument Manager
Sonoran Desert National Monument
21605 N. 7th Avenue
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(623) 580-5500

Date 09/13/2012

Finding of No Significant Impact

DOI-BLM-AZ-P040-2011-004-EA

Mesquite Well #433 Water Catchment Relocation & Construction

Based on the analysis of potential environmental impacts contained in the attached environmental assessment (EA), and considering the significance criteria in 40 CFR 1508.27, described below, I have determined that the proposed action will not have a significant effect on the human environment. An environmental impact statement is therefore not required.

Context

The Bureau of Land Management (BLM), in cooperation with the Arizona Game and Fish Department (AGFD), proposes to redevelop an existing water catchment (No. 433, Mesquite Well) within AGFD Game Management Unit (GMU) 40B (DOI-BLM-AZ-P040-2011-004-EA). After years of use, the catchment at Mesquite Well (Catchment No. 433) in the Sand Tank Mountains no longer functions adequately for mule deer or other wildlife water needs.

Catchment No. 433 is located on BLM-administered land within the SDNM. The catchment is located in Section 16, Township 7S, Range 2W, Maricopa County, Gila and Salt River Baseline and Meridian. During construction, up to 1 acre of ground disturbance is anticipated; following completion of the construction and associated restoration activities, approximately 0.1 acre of disturbance from the catchment facilities would remain.

An archaeological survey of the existing catchment at Mesquite Well revealed that the catchment is located within a relatively large (~2-acre) archaeological site; the site is considered eligible for the National Register of Historic Places (NRHP) (Ryden et al. 2009, Shirley and Grant, 2007). AGFD is proposing to redevelop the catchment, in a new location approximately 2,000-feet south of the existing catchment to avoid this sensitive archaeological site, while allowing for the continued provision of permanent water sources for wildlife in the area.

The existing catchment was constructed in 1956, and is managed by the AGFD, is intended as supplemental water source for wildlife, and has been used for more than 40 years throughout the Sonoran Desert National Monument (SDNM). Wildlife species such as bighorn sheep and mule deer, as well as other species, benefit from the permanent water supplied by this water catchment.

Routine inspections have revealed that the existing Mesquite Well water catchment functions poorly due to age-related deterioration, resulting in loss of water through leakage. Additionally, the existing catchment cannot self-fill from rainfall, so water must be hauled to the catchment to maintain a water supply. Therefore, the AGFD needs to replace the existing catchment. Reconstruction of this catchment is intended to improve the reliability of water sources for wildlife use in the area.

Intensity

The following discussion is organized around the 10 Significance Criteria described at 40 CFR 1508.27. The following have been considered in evaluating intensity for this proposal:

1. Impacts that may be both beneficial and adverse

The project would result in short term adverse impacts to vegetation (habitat) and wildlife during construction, however once catchment redevelopment is complete, removal of the existing Mesquite Well catchment and subsequent restoration would improve wildlife habitat in that area. Impacts to wildlife and migratory birds will be minimized by timing the proposed construction activity to occur in winter, or early spring, prior to the arrival of migratory birds.

Inconvenience to the recreating public would occur during catchment construction activities (~2 weeks), and would include an increase in noise and dust at the proposed catchment site, as well as the reduced ability for users to avoid the sights, sounds, and evidence of other people. However, these disturbances would only last approximately two weeks and would be localized to each catchment location. Once construction is complete, wildlife would be attracted to the catchments, which would increase opportunities for the recreation to view (and/or hunt) wildlife.

Removal of the existing Mesquite Well catchment has the potential to adversely impact cultural resources at this location. The presence of an archaeological monitor during ground-disturbing activities at the existing catchment location could reduce impacts to the site. No cultural resources are recorded at the proposed new catchment location.

In general, the catchment would be well hidden and generally not visible to the casual observer; all aboveground components would be treated with materials and colors that match or blend with the surrounding area to reduce the visual impacts of the structure. Further, construction activities would increase the ecological value of the area by providing a reliable source of water for wildlife.

2. Degree of effect on public health and safety

There are no known effects on public health and safety.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:

The existing catchment and proposed new location for the catchment are located in the Sonoran Desert National Monument.

The existing catchment at Mesquite Well is located within the boundaries of a relatively large (~2-acre) archaeological site; the site is considered eligible for the National Register of Historic Places (NRHP).

4. Degree to which the possible effects on the quality of the human environment are likely to be highly controversial:

Construction of the water catchment is not expected to be controversial in terms of impacts to the quality of the human environment. The proposed action is located in a remote area far from population centers in the region.

5. Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risk.

There is no uncertainty or unique or unknown risk associated with the proposed action.

6. Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The action would be consistent with previous precedent to redevelop existing, and failing, catchments across Arizona; NEPA analysis for future catchment redevelopment would continue to be required.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:

Six additional water catchment renovation projects with similar disturbance areas are known to be planned for the SDNM area. There would be a cumulative impact to wildlife from the improvement of numerous catchments across the SDNM, resulting in the loss of habitat, soil compaction, and noise from construction, as detailed in the EA. Detrimental impacts from cumulative actions are not anticipated to be significant. Alternatively, long-term benefits could enhance the overall sustainability and viability of wildlife populations in the SDNM over time.

8. Degree to which the action may adversely affect district, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources:

As above, the existing catchment at Mesquite Well is located within the boundaries of a relatively large NRHP eligible archaeological site. AGFD is proposing to redevelop the catchment, in a new location approximately 2,000-feet south of the existing catchment, to avoid this sensitive archaeological site, while allowing for the continued provision of permanent water sources for wildlife in the area. Archaeological monitoring of the removal of the existing Mesquite Well catchment would be conducted during all ground-disturbing activities. The presence of an archaeological monitor during ground-disturbing activities at the existing catchment location could reduce impacts to the site.

9. Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:

No Threatened, Endangered, or Candidate plant species occur in the project area. The proposed action is not within any critical habitat that has been designated or proposed under the ESA, and no Federally listed species are known or suspected to occur in the project area.

10. Whether the action threatens a violation of federal, state, or local environmental protection law:

The proposed action does not threaten a violation of federal, state or local environmental protection laws.

_____/s/_____
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Date 09/13/2012

**ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED CONSTRUCTION OF A
WATER CATCHMENT IN THE SONORAN DESERT NATIONAL
MONUMENT, MARICOPA COUNTY, ARIZONA**

Prepared for

**U.S. Department of the Interior
Bureau of Land Management**
Lower Sonoran Field Office
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September 2012

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Acronyms and Abbreviations

AGFD	Arizona Game and Fish Department
AZHGIS	Arizona Heritage Geographic Information System
AWC	Arizona Wilderness Coalition
AZPARC	Arizona Partners in Amphibian and Reptile Conservation
BLM	Bureau of Land Management
BMP	best management practices
CFR	Code of Federal Regulations
EA	environmental assessment
ESA	Endangered Species Act
GMU	game management unit
HDMS	Heritage Data Management System
IO	isolated occurrence
MBTA	Migratory Bird Treaty Act
NEPA No.	National Environmental Policy Act Number
NRHP	National Register of Historic Places
RMP	resource management plan
SDNM	Sonoran Desert National Monument
USC	United States Code
VRM	Visual Resource Management

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Chapter 1

INTRODUCTION

1.1 BACKGROUND

The Bureau of Land Management (BLM), in cooperation with the Arizona Game and Fish Department (AGFD), proposes to redevelop an existing water catchment (No. 433) in southern Arizona within AGFD Game Management Unit (GMU) 40B. The catchment is managed by the AGFD, is intended as supplemental water source for wildlife, and has been used for more than 40 years throughout the Sonoran Desert National Monument (SDNM). Wildlife species such as bighorn sheep and mule deer, as well as other species, benefit from the permanent water supplied by this water catchment. Reconstruction of this catchment is intended to improve the reliability of water sources for wildlife use in the area.

Catchment No. 433 is located on BLM-administered land within the SDNM (Figures 1.1 and 1.2). The catchment is located in Maricopa County, Gila and Salt River Baseline and Meridian (Table 1.1).

Table 1.1. Location of the Catchment

Catchment No.	Location (Section, Township, Range)
433/Mesquite Well	NE ¼ of S16, T7S, R2W (USGS Big Horn)

1.2 PURPOSE AND NEED

This catchment was constructed in 1956; original construction of the catchment specifically targeted mule deer in order to provide local herds with a reliable year-round, water source. A reliable year, round water source is important because the SDNM has limited rainfall and few permanent water sources for mule deer and other area wildlife. Permanent water sources are thought to expand wildlife distribution across the landscape, reduce mortality, and increase productivity (Roberts 1977). Mule deer in particular are dependent on free-standing water during very dry periods; according to Remington et al. (1984) and Hervert and Krausman (1986), water developments in Arizona experience the most use by mule deer during hot summer months.

The purpose of the project is to replace the existing catchment with a new catchment design at a new nearby location. The two primary needs for relocating and replacing the existing catchment are:

1. To avoid known cultural resources at the existing catchment site, and
2. To maintain a reliable water source for wildlife.

The proposed new catchment location was identified approximately 2,000-feet away to avoid known cultural resources recorded at the existing catchment site, while allowing for the continued provision of permanent water sources for wildlife in the area. As discussed in Chapters 3 and 4, recreational use in and near the existing catchment continue to impact the prehistoric and historic period archaeological site located at the current catchment location.

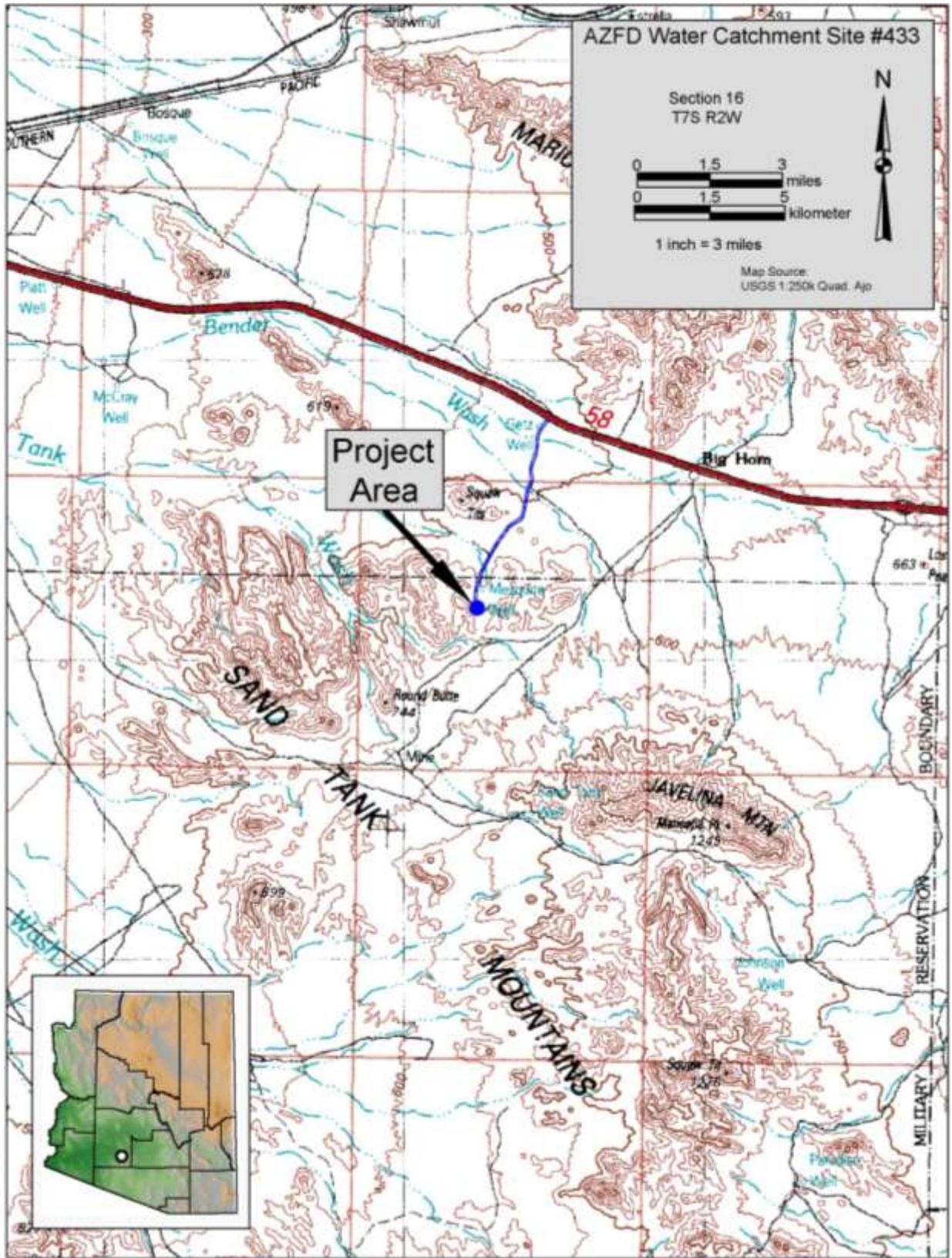


Figure 1.1. General location of the project area.

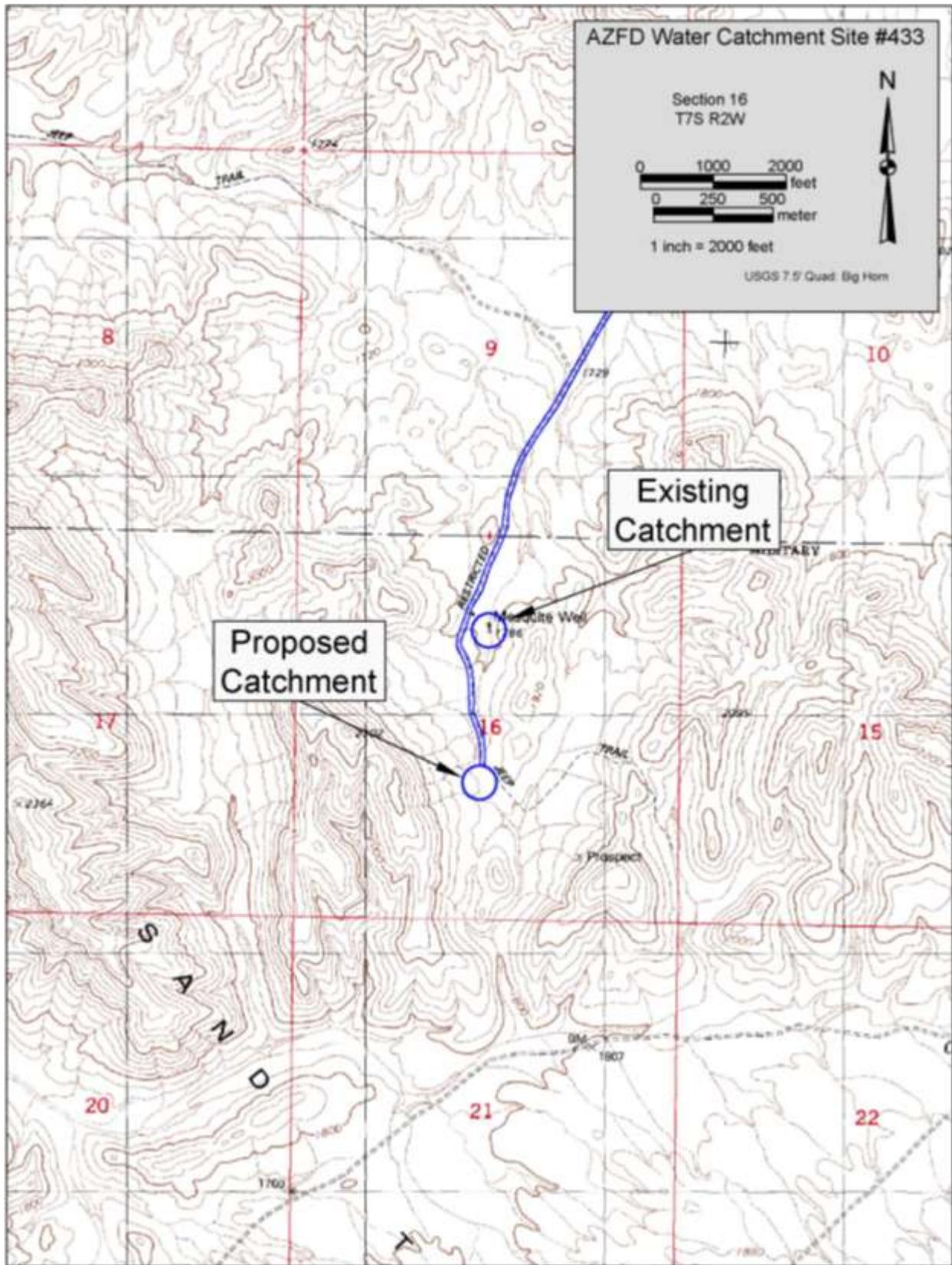


Figure 1.2. Project area location.

After years of use, the catchment at Mesquite Well (Catchment No. 433) in the Sand Tank Mountains no longer functions adequately for mule deer or other wildlife water needs. Routine inspections have revealed that the existing Mesquite Well water catchment functions poorly due to age-related deterioration, resulting in loss of water through leakage. Additionally, the existing catchment cannot self-fill from rainfall, so water must be hauled to the catchment to maintain a water supply. Therefore, the AGFD needs to replace the existing catchment.

The new catchment would harvest rainfall and increase water storage capacity, substantially reducing the existing need for water-hauling trips. The new catchment would be located approximately 2,000 feet south of the existing catchment (see Figure 1.2). The new design would have a low visual impact and reduces the risk of animal drowning, compared with the existing catchment. A dependable, operating catchment would reduce the need to haul water to the catchment and would require less maintenance. This would allow continued provision of permanent water sources available for wildlife dependent on them, and substantially reduce the number of water hauling trips and required maintenance activities, reducing the cost to AGFD.

The AGFD needs to replace the existing Mesquite Well water catchment to maintain the availability of water for wildlife at this location. As elaborated further in Section 1.4.1, the BLM needs to manage wildlife forage, water, cover, and space in order to support productive and diverse wildlife populations. As elaborated in Section 1.5, AGFD's strategic plan and development standards support the management and enhancement of wildlife habitats, specifically, maintenance of existing and development of new water catchments, through partnerships with public agencies, property owners and lessees, and wildlife conservation organizations.

1.3 SONORAN DESERT NATIONAL MONUMENT

The proposed catchment site is located within the SDNM. The SDNM contains more than 487,000 acres of Sonoran Desert landscape. The monument is home to three congressionally designated wilderness areas, many significant archaeological and historic sites, and remnants of several important historic trails. The presidential proclamation that established the Monument explains that SDNM was created because of its "extraordinary array of biological, scientific, and historic resources" (BLM 2002b; White House 2001). The proclamation does not diminish the jurisdiction of the State of Arizona with respect to fish and wildlife management. The analysis of impacts to specific resources constitutes the analysis of impacts to Monument objects in this EA.

1.4 CONFORMANCE WITH LAND USE PLANS

The Sonoran Desert National Monument Resource Management Plan (RMP) and Lower Sonoran RMP Revision had not been completed as of the publication date of this document (September 24, 2012). Thus the proposed action described in Chapter 2 is in conformance with the *Lower Gila South RMP/Environmental Impact Statement—Goldwater Amendment* (BLM 1990). The proposed action is consistent with the following decisions contained within this plan (see Section 1.4.1). It has been determined that the proposed action would not conflict with other decisions throughout this plan.

1.4.1 Conformance with the Lower Gila South RMP

The following decisions are from Chapter 2, Management Guidelines Common to All Alternatives in the Lower Gila South RMP (BLM 1990), regarding Wildlife:

- 1) Before installing facilities, BLM will conduct a site evaluation for state-protected animals and will develop mitigation to protect these species and their habitats. Such mitigation might include project relocation, redesign, or abandonment.
- 2) BLM will initiate formal Section 7 consultation with the U.S. Fish and Wildlife Service on all actions that may affect federal listed threatened and endangered species or its critical habitat as required by the Endangered Species Act (ESA) of 1973 as amended.
- 3) Fences proposed in big game habitat will be designed to reduce adverse impacts to big game movement. Specifications in BLM Manual 1737 and in local BLM directives will be used. BLM will consult with the AGFD on the design and location of new fences.
- 4) Where existing fences in big game habitat do not meet BLM specifications, they will be modified according to BLM Manual 1737 when they are scheduled for replacement or major maintenance.
- 5) As a general practice, new roads will not be bladed for use in fence construction. Vehicles will travel overland, or fences will be built by hand.
- 6) BLM will initiate a cooperative Habitat Management Plan with Arizona Game and Fish Department to address critical wildlife habitat needs in the Lower Gila South Planning Area.

The following decisions are from Chapter 2, Management Guidelines Common to All Alternatives in the Lower Gila South RMP (BLM 1990), regarding Protected Vegetation and Fuels Management:

- 1) Before construction or soil-disturbing activities are allowed, BLM conducts site evaluations for protected plants. If possible, projects are located to avoid impacts to large numbers of protected plants or their habitats. Where significant impacts to protected plants are possible, plants are salvaged and transplanted or the project is abandoned. BLM notified the Arizona Commission of Agriculture and Horticulture 30 days in advance of actions that would affect plants protected under the Arizona Native Plant law.
- 2) The BLM Phoenix District has developed a fire plan that is designed to manage fires as they occur in all areas of the district. The plan identifies areas suitable for prescribed burns, modified suppression areas, intensive control area, and rehabilitation measures. Objectives are to maintain desired plant communities, recycle nutrients, and prepare seed beds.

1.5 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

This EA has been prepared in accordance with the requirements of National Environmental Policy Act (NEPA) and any additional Federal, State, and local statutes that may be relevant to the proposed action, such as those cited below.

The proposed action is consistent with the Fundamentals of Rangeland Health (43 Code of Federal Regulations [CFR] 4180.1) and Arizona's Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines Team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for sensitive species. These resources are addressed later in this document.

The proposed action conforms to the President's National Energy Policy and would not have adverse energy impacts. The proposed action would not deny energy projects, withdraw lands, close roads, or in any other way deny or limit access to mineral materials to support energy actions.

Executive Order 13186 requires the BLM and other Federal agencies to work with the U.S. Fish and Wildlife Service to provide protection for migratory birds. Implementation of the proposed action is not likely to adversely affect any species of migratory bird known or suspected to occur in the project area. No take of any such species is anticipated.

The proposed action complies with the *Arizona Game and Fish Department's Wildlife Program Management Strategic Plan for the Years 2001–2006* (AGFD 2001a) and the *Arizona Game and Fish Department Water Development Standards* (AGFD 2005a). AGFD's strategic plan and development standards support the management and enhancement of wildlife habitats, specifically, maintenance of existing and development of new water catchments, through partnerships with public agencies, property owners and lessees, and wildlife conservation organizations.

In addition, the proposed action would comply with the following laws and/or agency regulations, other plans and are consistent with applicable Federal, State, and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act of 1934
- Federal Land Policy and Management Act of 1976 (43 United States Code [USC] 1707 *et seq.*)
- Public Rangelands Improvement Act of 1978
- Endangered Species Act of 1973, as amended
- 43 CFR 4100 Grazing Administration—Exclusive of Alaska
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001–3013; 104 Stat. 3048-3058)
- National Environmental Policy Act of 1969
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds

1.6 INTERIOR BOARD OF LAND APPEALS: CATCHMENTS IN THE SONORAN DESERT NATIONAL MONUMENT

The BLM prepared an environmental assessment (EA) (AZ-020-2001-0035), with a decision and finding of no significant impact (FONSI) on June 5, 2002. The EA analyzed proposed improvements to 16 wildlife catchments in the Sonoran Desert National Monument; one of these catchments is the current proposed catchment (Catchment No. 433).

The Arizona Zoological Society, the Center for Biological Diversity, Friends of Cabeza Prieta, Sierra Club, Grand Canyon Chapter, and the Wilderness Society (appellants) appealed the June 2002 decision and FONSI issued (Interior Board of Land Appeals [167 IBLA 347]). The Appellants contended that BLM's EA and FONSI were inadequate under the National Environmental Policy Act of 1969 (NEPA), as amended, 42 U.S.C. § 4332(2)(C) (2000), because the EA failed to take a "hard look" at and analyze the impacts of the project, including impacts on the values recognized in the designation of the SDNM. The Appellants also disagreed that, as the EA states, artificial water catchments benefit wildlife, generally, and desert bighorn sheep specifically. They argued that BLM violated NEPA when it failed to acknowledge and discuss in the EA the scientific controversy pertaining to whether installation of water catchments or artificial water sources actually benefit wildlife.

Ultimately, the IBLA found that the appellants did not demonstrate error in the BLM decision, rather they presented a difference of opinion regarding the potential efficacy of providing water catchments for wildlife (January 2006). The IBLA determined that there was not a sufficient showing to overturn the BLM decision.

1.7 IDENTIFICATION OF ISSUES

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives. A summary of the issues and the rationale for analysis are given below. Issues, for the purposes of this document are essentially an effect on a particular resource component.

- **Vegetation:** Disturbance to vegetation, including sensitive species, could occur during construction activities, including the potential loss of cacti in and around the footprint of the catchments. Maintenance and water hauling could also result in minor trampling of vegetation within and adjacent to the catchment site.
- **Wildlife:** Disturbance to wildlife, including migratory birds and sensitive species, could occur during construction activities, water hauling, and maintenance activities, including the potential loss of vegetation and, consequently, the potential short-term loss of wildlife habitat, as well as increased noise and soil compaction. Wildlife habitat should be affected in the long-term by providing a more reliable water source.
- **Recreation:** Disturbance to the recreating public could occur during construction activities. Disturbances could include increase noise as well as reduced opportunities for solitude in the short term. Improvements to the catchment design should reduce the number of water hauling and maintenance trips and attract wildlife to the catchments, resulting in increased opportunities for solitude in the area and increased opportunities for wildlife viewing in the long-term.
- **Cultural:** A historic site and prehistoric archaeological artifacts are present at the existing Mesquite Well location that could be impacted if the catchment at Mesquite Well is removed or redeveloped.
- **Visual Resources:** The proposed action has the potential to alter the appearance of the project area (i.e., the visual setting) in the short term during construction activities.

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Chapter 2

PROPOSED ACTION AND ALTERNATIVES

This EA focuses on the proposed action and no-action alternatives. The no-action alternative is considered and analyzed to provide a baseline with which to compare the impacts of the proposed action. The BLM interdisciplinary team explored and evaluated several different alternatives to determine whether the underlying need for the proposed action, to provide a reliable year-round water source for wildlife, would be met. Those alternatives considered but eliminated from further analysis are described in Section 2.3, along with the rationale for not further considering these alternatives.

2.1 PROPOSED ACTION

A new water catchment would be constructed approximately 0.3 miles (roughly 2,000 feet) south of the existing Mesquite Well catchment to ensure adequate future water supply in each area. The proposed improvements include complete removal of the existing Mesquite Well catchment (see Figure 1.2). Construction of the new catchment includes installing dams, troughs, pipelines, and an underground (fiberglass) storage tank in a manner consistent with the *AGFD Wildlife Water Development Standards* (AGFD 2005a).

Access to the proposed and existing catchments would occur on an existing road extending 4.4-miles south from Interstate 8. Access to the proposed catchment could require road improvements to deal with erosion and make it passable for heavy equipment. Improvements are expected to include thinning of overgrown vegetation along the roadway, as well as possible blading of steep wash banks along the roadway to allow access for construction equipment; no widening of the roadbed is expected. Access road improvements are expected to be scattered and not be required for the length of the 4.4-mile route, but are expected to occur as needed in various locations. If additional road deterioration occurs over time as the proposed catchment is maintained, BLM standard best management practices (BMPs), described in Section 2.1.1, would be implemented to alleviate the impacts.

Construction of the proposed new water catchment would involve the installation of three separate components, all of which have a lower visual profile than the existing catchments. The first component would be a series of low, cement water-collection dams. Two dams collect sheet flow from the west side of the project area, and one dam collects water from a wash northwest of the project area. Each collection area disturbs approximately 15 square feet (for a total of 45 square feet).

The second component is the water storage tank. The three collection points (dams) connect to the water storage tank via a 30-foot-long, gravity-fed pipe. This screened intake pipe has a diameter of 6 inches to limit the amount of water that can enter the water storage tank. Excess water spills over the collection dam to continue downstream. Disturbance associated with piping between the water-collection points and the water storage tank will be approximately 2 × 30 feet each (for a total of 180 square feet). The water storage tank consists of four connected rows of 24-inch PVC capped pipes, each 120 feet long, laid side by side below the water-collection area. The four pipes that make up the tank are buried in a trough in a manner that ensures that the pipes are level. The four pipes will disturb approximately 10 × 120 feet (1,200 square feet). Once the tank is covered, four silver pipe vents will be visible. The total capacity of the water storage tank is 12,000 gallons.

The third component is the water trough. A segment of 3-inch-diameter pipe connects the water storage tank to the water trough for wildlife. The water trough is placed at the same level as the tanks so that the

water depth in the trough accurately reflects the remaining amount of water in the tank. The fiberglass trough is 4 × 4 feet, with a sloped maximum depth of 2.5 feet (16 square feet).

Installed catchment components would be kept as inconspicuous as possible using various camouflage techniques, to the greatest extent possible, to minimize any potential impacts. Techniques could include painting components with earth tones, using no reflective materials, breaking up linear shapes with sculpted concrete, covering components with soil rock or dead limbs, or burying components underground. The walk-in water trough, tanks, and connecting pipelines would be partially or wholly buried underground. However, if soil conditions impede excavation to the desired depth (up to approximately 5 feet), camouflage techniques would be limited to the use of rocks and dead vegetation native to the catchment location to blend the structure into the surrounding landscape.

If construction is mechanized, crew work time at the catchment sites is estimated to require 8 work days. Once construction at the catchment sites is complete, all extraneous construction materials would be removed from the area and disposed of properly. Disturbed surfaces would be leveled and smoothed to match the surrounding topography. Disturbance to live vegetation would be kept to a minimum by restricting construction activities to the existing catchment footprint and immediate areas.

During construction, a campsite may be needed for work crews at the catchment site. The locations of any campsite for construction crews would be coordinated with BLM and located in previously disturbed areas. Workers would camp and park, during nonworking hours, at least 0.25 mile away from the construction area, for the entire 8-day work period.

The minimum number of tools necessary to complete the project would be transported to the site via trucks and trailers. Using only existing roads, trucks would transport materials and a backhoe tractor to the project site. The trucks would transport small hand tools and miscellaneous hardware. The backhoe would excavate a hole for the tanks, trough, and pipeline at the site and would help position these components in place.

After construction is complete, two activities will occur at the proposed new catchment location: site restoration and maintenance, including limited water hauling. First, excavated dirt will be recontoured throughout the project area by the construction crew. Dead and down plant material, in addition to existing rock debris, will be placed on top of the disturbed area to revegetate and camouflage the catchment area. Any topsoil will be replaced and a native seed mix will be applied to the area to aid in revegetation. The proposed action does not include plans for the installation of fencing; however the area will be monitored by AGFD personnel and if burros and cattle appear to be using the area, fencing might need to be added (see Section 2.1.1). Total short-term disturbance is up to 1 acre and less than 0.1 acre in the long-term, after vegetation returns.

Second, water will be hauled in to sufficiently fill the tanks until naturally occurring rainfall replaces the initial delivery. Additional water will be hauled to the site as needed; the amount will depend on local precipitation levels. The proposed catchment design is expected to require fewer water-hauling trips than the existing Mesquite Well catchment.

Long-term maintenance activities at the proposed new catchment site include conducting inspections seven to eight times per year to ensure adequate water levels, removing debris from intake areas, assessing and repairing damage to the proposed catchment, and performing other minor maintenance activities. The frequency of maintenance activities would depend on weather conditions, volume of animal use, and unexpected damage to the catchments. The proposed catchment is expected to require less maintenance than the existing Mesquite Well catchment. For example, most of the components of the proposed catchment are located beneath the surface, which reduces impacts from weather deterioration.

The existing Mesquite Well catchment would remain in operation for 6 to 12 months, until the AGFD has confirmed that the proposed catchment is working properly and has documented wildlife use at the proposed catchment location. Water-hauling trips to supply the proposed catchment would also provide water to the existing Mesquite Well catchment, as necessary. During the existing catchment's final months of use, operational maintenance would also occur.

After confirming that the proposed catchment is operating properly and is being used by wildlife, the existing Mesquite Well catchment would be dismantled (all fencing, as well as aboveground tanks, cement structures and pipes that are not historic components of the known archaeological site located at the catchment) and removed from the SDNM. The existing catchment area would be reclaimed with native vegetation after non-native or noxious species, such as Bermuda grass (*Cynodon dactylon*), have been eradicated, as feasible. Removal of the existing Mesquite Well catchment is important in considering effects to known cultural resources at the location.

2.1.1 Best Management Practices

The following BMPs are included in the proposed action in an effort to minimize the impacts of the proposed action to social and natural environmental resources.

- Limit construction activities to the daylight hours between November 15 and March 15. This is during the Sonoran Desert tortoise winter dormancy period and is generally not times of high water demand; therefore, impacts to wildlife could be minimized. Construction activities would be limited to periods when the soil and ground surface are not wet to avoid soil compaction issues.
- Construction activities would be conducted in a manner that would minimize disturbance to existing vegetation by limiting vegetation thinning and restricting construction activities to the existing catchment footprint, the proposed catchment footprint, and immediate areas.
- Eradicate non-native and noxious weeds at the existing catchment location, as feasible.
- If an active bird nest is observed before or during construction, measures would be taken to protect the nest.
- If Sonoran Desert tortoises are encountered within the project area, it is recommended that the Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (Appendix A) be followed.
- If removal of individual trees or cacti protected under the Arizona Native Plant Law (Arizona Revised Statutes §§3-901 to 3-934) were necessary, they would be replanted in the immediate area, adjacent to their original locations. Uprooting of any trees and cacti would be avoided to the extent possible. Any removed cacti would be replanted within the catchment site.
- The locations of any campsites for construction crews—if needed—would be coordinated with the BLM and located in previously disturbed areas.
- Vehicles and equipment would be power washed off-site before construction activities at each catchment site to minimize the risk of spreading weeds; the project area would be monitored for weeds after construction.
- Control dust associated with construction with tarps and/or water.
- Limit soil disturbance associated with construction activities by restricting disturbance to the existing catchment footprint, the proposed catchment footprint, and immediate vicinity.
- Recontour excavated dirt throughout the project area (includes scraping and piling).

- Replace any topsoil and apply a BLM-approved seed mix to aid in revegetation.
- Return dead and downed plant material, in addition to existing rock debris, to the disturbed area to revegetate the existing catchment area.
- Renovations associated with the proposed action would use natural materials such as dead vegetation at each catchment, as well as rock debris, as much as possible, and/or paint colors (light browns, greens, and grays) that would blend in with the surrounding landscape.
- Add pigment to cement used in the drinker so that it matches the surroundings.
- Use rocks from the area to avoid or mask straight lines.
- During construction, vehicular traffic would be restricted to existing routes.
- Design construction trenches with 45° to 60° slopes to prevent wildlife from becoming entrapped and to meet Occupation Health and Safety Administration standards for trenching.
- Cover trenches at night and check for entrapped animals.
- Remove construction debris to an appropriate landfill location.
- Rake out any vehicle tracks in the project area after construction.
- Do not install fencing unless the area is used by burros and cattle.
- All historic and prehistoric components of the cultural resources at Mesquite Well would be avoided. If large equipment is required to remove the catchment components, flagging of the site's features and a clear path to the catchment would be required.
- Archaeological monitoring of the removal of the existing Mesquite Well catchment would be conducted during all ground-disturbing activities.
- Any cultural (historic/prehistoric site or object) or paleontological resource (fossil remains of plants or animals) discovered at the catchments would immediately be reported to the authorized officer or his/her designee. All operations in the immediate area of the discovery shall be suspended until written authorization to proceed is issued. An evaluation of the discovery shall be made by a qualified archaeologist or paleontologist to determine appropriate actions to prevent the loss of significant cultural or scientifically important paleontological values.
- Construction of the improvements is not anticipated to affect waters of the United States; however, the AGFD would obtain appropriate permits when necessary before project implementation.

2.2 NO-ACTION ALTERNATIVE

Under the no-action alternative, the proposed water catchment would not be built and no new construction, renovation, or upgrading would occur. Water would continue to be hauled to the site at a rate that would be expected to increase as the condition of the existing Mesquite Well catchment deteriorates. The expected frequency of future water hauling trips could increase up to double the water delivery of current conditions; water delivery could increase from three to four trips per year up to four to six trips per year. Wildlife in the area would continue to use the Mesquite Well catchment water and any naturally occurring seasonal water sources in the area. Annual water hauling and maintenance activities would continue to occur at a rate similar to existing conditions.

Under the no-action alternative, the cultural site would continue to be threatened by vehicle use over and in close proximity to site features. The presence of the wildlife water equipment would continue to attract

additional public visitation, thereby encouraging increasing vehicle intrusion onto site features. The likelihood of new and continuing degradation to the site would be assured.

2.3 ALTERNATIVE CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.3.1 Refrain from Constructing a New Water Catchment and Discontinue Hauling Water

Under this alternative, AGFD would not build the proposed water catchment and would discontinue hauling water to the existing catchment. The existing Mesquite Well catchment would no longer provide a reliable year-round water supply, and wildlife in the area would rely solely on naturally occurring seasonal water sources.

Wildlife populations have come to depend on water sources such as the existing catchment at Mesquite Well. Not replacing these catchments and not continuing to haul water to fill them would likely result in a reduced wildlife population size in the Sand Tank Mountains. This alternative does not meet the purpose and need of the project; therefore, it was not carried forward for further analysis.

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Chapter 3

AFFECTED ENVIRONMENT

The purpose of this chapter is to describe the existing environment potentially affected by the alternatives. AGFD staff expect up to 1 acre of disturbance associated with the construction of each water catchment system. Following completion of the project and initial restoration activities, approximately 0.1 acre would remain disturbed in the long term.

The existing catchment site is located 4 miles south of Interstate 8 in the SDNM. The catchment site is characterized by undisturbed desert traversed by ephemeral washes, surrounded by the low-lying hills of the Sand Tank Mountains.

The existing catchment was originally constructed in 1956 as a water source that primarily targeted big horn sheep, mule deer, and javelina, and other small or non-game wildlife species. The original construction at the existing catchment consisted of a windmill and a concrete trough. The windmill was removed in 1986, along with putting in a fiberglass trough and tank in since the concrete was not repairable. The tank and trough were replaced again in 2000 due to damage.

Water Storage and Hauling

Catchment No. 433 (also named Mesquite Well): This catchment has the capacity to store up to 2,150 gallons of water. Between 2000 and 2007, the AGFD annually hauled 1,500 gallons of water to the site, averaging two to four trips per year at a cost of \$800 per load.

3.1 ISSUES ELIMINATED FROM DETAILED STUDY

Critical elements of the human environment are those elements that are subject to the requirements specified in statute, regulation, or executive order, and must be considered in all EAs. BLM resource specialists considered each of the critical elements to determine whether it would be potentially affected by the proposed action. These elements are identified in Table 3.1, along with the rationale for determination. If any element was determined to be potentially impacted, it was carried forward for detailed analysis in this EA; if an element is not present or would not be affected, it was not carried forward for analysis. Table 3.1 also contains other resources/concerns that have been considered in this EA. As with the critical elements, if these resources were determined to be potentially affected, they were carried forward for detailed analysis in this document.

Table 3.1. Critical Elements of the Human Environment and Other Resources/Concerns

Resource	Determination*	Rationale for Determination
<i>Critical Elements of the Human Environment</i>		
Air Quality	NI	Air quality in the general area is good, although windblown dust and smog from urban areas are minor sources of pollution. The SDNM south of Interstate 8 is an attainment area for all National Ambient Air Quality Standards. The proposed action would result in temporary, localized deterioration of air quality because of the operation of equipment and the dust generated construction activities at the catchment, but these emissions would be temporary and would cease once construction at the catchment site is complete.
Areas of Critical Environmental Concern	NP	There are no Areas of Critical Environmental Concern within the project areas.

Table 3.1. Critical Elements of the Human Environment and Other Resources/Concerns (Continued)

Resource	Determination*	Rationale for Determination
Critical Elements of the Human Environment, continued		
Cultural Resources	PI	A cultural resources inventory of the access road, existing Mesquite Well catchment, and the proposed catchment location was conducted (Mitchell and Ryden 2008). Two sites were found at the existing catchment and three sites were found on the access road. The two sites at the existing catchment and two of the sites along the access road are eligible for the National Register of Historic Places. If these sites cannot be avoided during construction activities and road improvements, additional archaeological work would be required.
Environmental Justice	NI	The proposed action would have no disproportionately high or adverse human health or other environmental effects on minority or low-income segments of the population. The proposed action would also have no effect on low-income or minority populations.
Farmlands (Prime or Unique)	NP	There are no prime or unique farmlands within the project areas.
Floodplains	NI	No actions are proposed that would result in permanent fills or diversions, or placement of permanent facilities, in floodplains or special flood or hazard areas. In addition, according to the Federal Emergency Management Agency Flood Insurance Rate Maps, the catchment is not located within a 100-year floodplain. The catchments are located in zone of minimal or unknown flooding hazard.
Invasive, Non-native Species	NI	There are currently no known invasive species or noxious weeds within the proposed catchment area. Bermuda grass was observed around the existing catchment at Mesquite Well. Measures to prevent the spread of invasive and noxious weeds have been built into the proposed action. No impacts from the proposed action are therefore anticipated.
Native American Religious Concerns		No known Native American Religious Concerns are associated with the project.
Threatened, Endangered, or Candidate Plant Species	NP	No Threatened, Endangered, or Candidate plant species occur in the project area (Appendix B).
Threatened, Endangered, or Candidate Animal Species	NP	The proposed catchment site is not within any critical habitat that has been designated or proposed under the ESA, and no Federally listed species are known or suspected to occur at any of these locations (see Appendix B).
Wastes (hazardous or solid)	NP	No known hazardous or solid waste issues occur in the project areas.
Water Quality (drinking/ground)	NI	No permanent springs or continuously flowing streams are located at any of the eight catchments. Additionally, there is no connection to any drinking or groundwater sources. Therefore, redevelopment of the water catchments would not affect water quality.
Wetlands/Riparian Zones	NP	There are no wetlands/riparian zones at the proposed catchment site.
Wild and Scenic Rivers	NP	There are no Wild and Scenic River segments classified as designated, eligible, or suitable within the project areas.
Wilderness	NP	The proposed catchment site is not located within designated wilderness.
Other Elements of the Human Environment		
Livestock Grazing	NP	Redevelopment of the water catchments would not affect livestock grazing because there are no known grazing allotments in the project area.
Woodland/Forestry	NI	Redevelopment of the water catchments would not affect the availability of, or access to, these resources because no trees will be removed during construction activities.
Vegetation	PI	Disturbance to vegetation could occur during construction, maintenance, and water hauling.
BLM or State Sensitive Plants	PI	Redevelopment of the water catchments would not affect BLM or State Sensitive plants.

Table 3.1. Critical Elements of the Human Environment and Other Resources/Concerns (Continued)

Resource	Determination*	Rationale for Determination
Wildlife (including sensitive species and migratory birds)	PI	Disturbance to wildlife could occur during construction, water hauling, and maintenance activities, including the potential loss of vegetation and, consequently, the potential short-term loss of wildlife habitat, as well as increased noise and soil compaction.
Soils	NI	All soils are Hyder-Gachado Gunsight soils, which are extremely gravelly, sandy loams, and are well drained. All construction activities would occur in previously disturbed areas or in a very small vicinity; therefore, the proposed action would not affect soils beyond the existing conditions.
Recreation	PI	Disturbance to the recreating public could occur during construction activities, including increased noise as well as reduced short-term opportunities for solitude.
Visual Resources	PI	Short-term alteration the visual setting of the project areas could occur during and immediately after construction activities.
Geology/Mineral Resources/Energy Production	NI	The proposed catchment is not expected to affect geology, mineral resources, or energy production because disturbances are not expected to exceed the footprint of the proposed catchment or catchment enclosures.
Paleontology	NP	No paleontological resources are known to occur in the project area.
Lands/Access	NI	Access to public lands would not be altered or impaired by implementation of the proposed action. No other land issues have been identified in connection with the proposed action.
Fuels/Fire Management	NI	No hazardous fuels reduction or fuels management projects are proposed for these areas. Construction of water catchment would not affect fire management.
Socioeconomic Values	NI	Construction of the water catchment would not affect socioeconomic values because the catchment is located in a remote area far from population centers in the region.
Wild Horses and Burros	NP	Disturbances to wild horses and burros would not occur because the proposed catchment site is not located within a wild horse or burro herd management area.
Wilderness Characteristics	PI	None of the catchments are located within areas managed to maintain wilderness characteristics.
Objects of the Sonoran Desert National Monument		
Functioning Desert Ecosystem	NI	There would be no net change in the function of the desert ecosystem. Water is currently available at Farley's Cabin. Water availability would be shifted from the historic site to a new area to the south. There is no net ecological effect.
Diversity of Plant and Animal Species	PI	Plants and animals may be impacted by the proposed project. The effects on plant and animal species habitat, population, and diversity will be considered in the wildlife and vegetation analysis (see Sections 3.2.1, 3.2.2, 4.2.1 and 4.2.2).
Saguaro Cactus Forests	NI	Individual plants might be impacted by the project. The project would, however, have no effect on the health or extent of the Monument's saguaro cactus forests.
Sand Tank Mountains	NI	This large mountain range, over 89,000 acres in size, would not be impacted by any of the proposed activities.
Scientific Analysis of Plant Species and Climates	NP	No resources or resource impacts influencing the Monument's value for scientific analysis of plant species and climates are affected by this project.
Vegetation Communities: Creosote-Bursage, Desert Grassland, and Washes	PI	Disturbance to vegetation could occur during construction, maintenance and water hauling. The creosote-bursage community could be impacted. Desert washes and grasslands would not be impacted. Impacts on the Monument's creosote-bursage community and other plant species are addressed in the vegetation section (see Sections 3.2.1 and 4.2.1).

Table 3.1. Critical Elements of the Human Environment and Other Resources/Concerns (Continued)

Resource	Determination*	Rationale for Determination
Wildlife	PI	Disturbance to wildlife could occur during construction, maintenance and water hauling, including the potential loss of vegetation. Consequently, the potential short-term loss of wildlife habitat, as well as increased noise and soil compaction, is present. Impacts on wildlife species and habitat are addressed in the wildlife section (see Sections 3.2.2 and 4.2.2).
Archaeological and Historic Sites	PI	Cultural and historic sites are present in the Farley's Cabin area, along the access road and near the proposed project site. These resources are addressed in the cultural resources section (see Sections 3.2.4 and 4.2.4)

* NI = Present, but not affected to a degree that would mean detailed analysis is required.

NP = Not present in the area that will be impacted by the proposed action.

PI = Present with potential for impact; analyzed in detail in the EA.

3.2 RESOURCES BROUGHT FORWARD FOR FURTHER ANALYSIS

3.2.1 Vegetation

The project area is in the Arizona Upland subdivision of the Sonoran Desertscrub biotic community at elevations ranging between 1,550 and 1,850 feet above mean sea level (Brown 1994). Major vegetative components are typical of this biotic community and include foothill paloverde (*Parkinsonia microphylla*), ironwood (*Olneya tesota*), velvet mesquite (*Prosopis velutina*), saguaro (*Carnegiea gigantea*), whitethorn acacia (*Acacia constricta*), creosote bush (*Larrea tridentata*), brittlebush (*Encelia farinosa*), sweetbush (*Bebbia juncea*), ocotillo (*Fouquieria splendens*), triangle-leaf bursage (*Ambrosia deltoidea*), cholla (*Cylindropuntia* spp.), pincushion cactus (*Mammillaria* sp.), and barrel cactus (*Ferocactus wislizeni*). Creosotebush, cholla, and ocotillo are the primary plant species within the disturbance area, while saguaro and paloverde surround the disturbance area of the proposed catchment.

3.2.1.1 Sensitive Species

Saguaro (*Carnegiea gigantea*)

Habitat and Range Requirements. Found in some but not all parts of the Sonoran Desert. Range is limited by elevation and freezing temperatures in winter. Generally found growing between sea level and approximately 4,000 feet. Saguars growing higher than 4,000 feet are usually found on south-facing slopes. Also found on desert slopes and well-drained flats, especially rocky bajadas (Epple 1995). Saguars are protected as salvage restricted under the Arizona Native Plant law and any impact made to the species must be done with a permit.

Habitat Evaluation and Suitability. The project area is inhabited by numerous saguaros which were observed during field reconnaissance. The area along the road is less populated with the species because of previous road blading, but they are located in the areas of the existing water catchment and the proposed water catchment.

Emory's Barrel Cactus (*Ferocactus emoryi*)

Habitat and Range Requirements. Emory's barrel cactus is found on hillsides, washes, alluvial fans, mesas, or flats, and on gravelly rocky or sandy soils, rocky slopes and adjacent bajadas. Their associated vegetation is Sonoran Desertscrub, and they are found in elevations up to 3,600 feet in Arizona and Sonora, Mexico (Flora of North America 2008). Emory's barrel cacti are protected as salvage restricted under the Arizona Native Plant Law, and any impact made to the species must be done with a permit.

Habitat Evaluation and Suitability. The AGFD online review tool (Arizona Heritage Geographic Information System [AZHGIS] 2008) shows that Emory's barrel cactus occurs within 3 miles of the project area. The project area contains hillsides, washes, rocky, sandy soils, and the Sonoran Desertscrub vegetation associated with the species.

3.2.2 Wildlife, Including Migratory Birds and Sensitive Species

Wildlife populations in the project area are typical of the Sonoran Desertscrub biotic community. Mammals that use the area include desert bighorn sheep (*Ovis canadensis mexicana*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), javelina (*Dicotyles tajacu*), gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxa*), desert cottontail (*Sylvilagus audubonii*), and various bat species. Birds include Gambel's quail (*Callipepla gambelii*) and dove (*Zenaida* spp.). Reptiles include greater earless lizard (*Cophosaurus texanus*), spiny lizard (*Sceloporus* spp.), and whiptail (*Aspidoscelis* spp.).

3.2.2.1 Migratory Birds

The Migratory Bird Treaty Act (MBTA) protects against the taking of migratory birds, their nests, and eggs except as permitted. Various migratory birds use the project area for foraging. Eight bird species were observed during the biological evaluation (SWCA Environmental Consultants [SWCA] 2008): northern flicker (*Colaptes auratus*), cactus wren (*Campylorhynchus brunneicapillus*), turkey vulture (*Cathartes aura*), Say's phoebe (*Sayornis saya*), mourning dove (*Zenaida macroura*), curve-billed thrasher (*Toxostoma curvirostre*), black-throated sparrow (*Amphispiza bilineata*), and red-tailed hawk (*Buteo jamaicensis*); however, no active nests were observed at any of the project areas. All the birds observed in the area are protected under the MBTA.

3.2.2.2 Sensitive Species

Habitat requirements, potential for occurrence, and possible effects on Federally listed, BLM Sensitive, and State-listed species are summarized in Appendix B (Tables B1–B3).

Based on the presence of suitable habitat and/or historical records of occurrence, the following BLM Sensitive and State-listed species may occur: big free-tailed bat (*Nyctinomops macrotis*), California leaf-nosed bat (*Macrotus californicus*), cave myotis (*Myotis velifer*), Great Plains toad (*Bufo cognatus*), pocketed free-tailed bat (*Nyctinomops femorosaccus*), Sonoran green toad (*Bufo retiformis*), cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), Sonoran Desert tortoise (*Gopherus agassizii*), Emory's barrel-cactus (*Ferocactus emoryi*), and Saguaro cactus (*Carnegiea gigantea*).

Big Free-Tailed Bat (*Nyctinomops macrotis*)

Habitat and Range Requirements. Big free-tailed bat has been found near high cliffs and rugged, rocky outcrops in a variety of habitats, including desertscrub and pine-oak forests in the southwest. They have been documented at elevations between 190 and 7,520 feet. They forage mainly on large moths and some other flying insects. Big free-tailed bats are known to use stock ponds as water and food sources, but are theorized as too large bodied to drink from water catchments (Herder 1996). Roost sites include rock crevices, human-built structures, and occasionally holes in trees. They do not hibernate; therefore, Arizona populations are expected to spend their winters in the southern part of the state (AGFD 2003b).

Habitat Evaluation and Suitability. The project area contains desertscrub vegetation and is in the Sand Tank Mountains, where rugged, rocky outcrops and high cliffs have the potential to occur within foraging distance. The project area also contains human-built structures that could be used as roosting sites.

California Leaf-Nosed Bat (*Macrotus californicus*)

Habitat and Range Requirements. California leaf-nosed bats can be found in Sonoran Desertscrub plant communities. In Arizona, they roost in mines, caves, and rock shelters and are found below 4,000 feet, with most occurrences below 2,500. They forage on large flying insects in flight and picked off from vegetation. They do not hibernate, and they forage year-round (AGFD 2001c).

Habitat Evaluation and Suitability. The project area contains desertscrub vegetation and is in the Sand Tank Mountains, where rock shelters, caves, and abandoned mines have the potential to occur within foraging distance.

Cave Myotis (*Myotis velifer*)

Habitat and Range Requirements. This bat can be found in habitats containing desertscrub or creosote bush, brittlebush, paloverde, and cacti in extreme southwestern U.S. and south to Mexico at 300 to 5,000 feet in elevation. It roosts in caves, tunnels, mineshafts, under bridges, and sometimes in buildings within a few miles of water. They forage on small moths and other flying insects (AGFD 2002).

Habitat Evaluation and Suitability. The project area contains desertscrub vegetation to support the species and is located within the elevational range of the species. The project area is within foraging radius of a known occurrence location in Gila Bend.

Great Plains Toad (*Bufo cognatus*)

Habitat and Range Requirements. In Arizona, the species is widespread, except for the higher mountains and lowest and driest portions of the Sonoran Desert. Found primarily in valleys, mesas, and flats characterized by Sonoran, Chihuahuan, or Great Basin desertscrub; grasslands; and sparingly into montane woodlands. Within these communities, this species can often be found in cattle tanks, roadside ditches and canals in agricultural areas, the floodplains of river and streams, ciénegas, and other wetland types (Arizona Partners in Amphibian and Reptile Conservation [AZPARC] 2008).

Habitat Evaluation and Suitability. Sonoran Desertscrub habitat is present in the project area to support the species. Bender wash bisects the northern section of the project area, which includes floodplain habitat the species may make use of.

Pocketed Free-Tailed Bat (*Nyctinomops femorosaccus*)

Habitat and Range Requirements. This bat can be found in arid lower elevations near high cliffs and rugged rocky outcrops. They are associated with a variety of vegetation, including desert shrubs, and roost in rock crevices and human built structures. They are insectivorous and generally forage on large moths and other flying insects. Their elevation ranges from 190 to 7,520 feet above sea level (AGFD 2003a).

Habitat Evaluation and Suitability. The project area contains the desert shrub vegetation associated with the species, and the project area is in the Sand Tank Mountains, which has potential access to high cliffs and rugged rocky outcrops.

Sonoran Green Toad (*Bufo retiformis*)

Habitat and Range Requirements. This species inhabits rain pools, wash bottoms, and areas near water in semi-arid mesquite-grassland, creosotebush desert, and upland saguaro-paloverde desert scrub at elevations in Arizona from 500 to 3,225 feet. They forage on arthropods (AGFD 2005b). In Arizona, this species occurs in valleys and sparingly onto the lower bajadas, where it is typically found in lower Colorado River and Arizona Upland subdivisions of Sonoran Desertscrub, but also in semi-desert

grasslands that have been invaded by mesquite and other desert trees, shrubs, and cacti. Within these vegetation communities, Sonoran green toads frequent cattle tanks and other impoundments, places where water accumulates in large arroyos, roadside ditches, and mesquite thickets (Nigro and Rorabaugh 2008).

Habitat Evaluation and Suitability. The project area occurs within approximately 15 miles of known locations of this species, and the vegetation associated with this species is also found within the project area.

Sonoran Desert Tortoise (*Gopherus agassizii*)

Habitat and Range Requirements. Sonoran Desert tortoise habitat occurs primarily in the hills and rocky mountainous terrain of the Sonoran Desertscrub biotic community. Desert tortoise habitat can also be found along washes in more level terrain adjacent to hills and desert mountain ranges (AGFD 1996) from elevations between 510 and 5,300 feet. Desert tortoises typically forage on plants, plant litter, cactus fruit, and arthropods. They are most typically found along washes and rocky areas, building their shelter sites in rocky areas or along the banks of washes. They have also been known to burrow under vegetation or rest directly underneath live or dead vegetation (AGFD 2001b).

Habitat Evaluation and Suitability. The AGFD online review tool (AZHGIS 2008) shows that Sonoran Desert tortoise have been documented within 3 miles of the project area. Additionally, this project area is located within BLM-designated Category II tortoise habitat, which has a goal to maintain stable, viable populations.

3.2.3 Recreation

The project area is located within the Sand Tank Mountains, which have been noted for lands that exhibit a high degree of naturalness and for providing outstanding opportunities for visitors to experience solitude and primitive, unconfined recreation. The existing Mesquite Well catchment area has been previously disturbed by the access road, construction and use of a historic structure, and related water-collection features. The hills surrounding the existing Mesquite Well catchment site, including the proposed water catchment location, exhibit a high degree of naturalness.

The SDNM is used for various forms of recreation, including hunting, sightseeing, horseback riding, off-road vehicle use, hiking, and camping. Recreation within the Mesquite Well area requires a free access permit from the BLM to travel south of a gate along the access road from Interstate 8.

The proposed catchment location is within the AGFD GMU 40B. Several hunting seasons are authorized by AGFD in this management unit. General deer season in GMU 40B is October 31–November 13; muzzleloader deer season is December 12–31; archery-only non-permit deer season is December 12–January 31. General big-horn sheep open season is December 1–31.

3.2.4 Cultural Resources

A cultural resources inventory of the access road, existing Mesquite Well catchment, and proposed catchment location was conducted (see *A Cultural Resources Survey of Proposed Water Catchment Site No. 433 and Access Road, Located in the Sonoran Desert National Monument, Maricopa County, Arizona* [Mitchell and Ryden 2008]). Three archaeological (cultural resource) sites were recorded along the access road and at Mesquite Well. Mesquite Well and one of the other sites were recommended eligible for inclusion in the National Register of Historic Places (NRHP). Cultural resources at the existing Mesquite Well include a historical site and a prehistoric archaeological artifact scatter. The proposed water catchment location is present on the site, but is not situated directly on any site

features.. If the catchment at Mesquite Well is removed, archaeological monitoring of the catchment removal would need to be conducted.

The other site is a segment of the SR 84 Casa Grande Highway, constructed in the 1930's. This site was previously recommended for the NRHP. The access route to the project area crosses this historic highway. Project activities will be designed to avoid any impacts to this historic site.

A single isolated occurrence (IO) was recorded along the southern boundary of the proposed water catchment location. The IO consists of three vesicular basalt metate fragments. The IO was fully recorded in the field, and no further treatment is recommended.

; If these sites cannot be avoided during road improvements and removal of wildlife water infrastructure, development and implementation of a treatment plan would be required. The third archaeological site was recommended ineligible for the NRHP, and no further archaeological work was recommended.

3.2.5 Visual Resources

BLM inventories and classifies public lands in order to identify and maintain areas that contain important scenic qualities; the Visual Resource Inventory classification system is based on a combination of three elements, including scenic quality, visual sensitivity, and distance zones, with the most important to visitors probably being scenic quality (BLM 1986). Scenic quality is described as the visual appeal of an area. The rating is based on seven key factors: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. BLM lands fall into one of four Visual Resource Management (VRM) classes.

The project area is within area designated VRM Class III. The management objective for VRM Class III is to partially retain the existing character of the landscape with no more than moderate changes to the landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

3.2.6 Wilderness Characteristics

The project is located within the Blue Plateau or Sand Tank Mountains West wilderness proposal developed by the Arizona Wilderness Coalition (AWC) as presented to the BLM in June 2004. The area's wilderness characteristics have been confirmed by BLM in subsequent field assessments. The Blue Plateau area is natural, and possess outstanding opportunities for primitive and unconfined recreation and solitude. The area also has many supplemental scenic, plant life, and cultural resources.

The project location is currently natural and near a vehicle route (Route 8012) that becomes more primitive and rugged immediately south of Farley's Cabin. The AWC proposes that the vehicle route south of Farley's Cabin is a vehicle way. They recommend its closure to public use and inclusion in their wilderness characteristics proposal.

Chapter 4

ENVIRONMENTAL CONSEQUENCES

This section includes a discussion of the environmental consequences (including a description of direct and indirect impacts, and cumulative effects, if any). Impacts are defined as modifications to the existing condition of the environment and/or probable future condition that would be brought about by implementation of one of the alternatives.

Impacts can be direct or indirect; direct impacts are those effects that are caused by the action or alternative and occur at the same time and place, while indirect effects are those effects that are caused by or would result from an alternative and are later in time but that are still reasonably certain to occur. Cumulative effects are generally assessed using the environmental impacts of past, present, or reasonably foreseeable future actions within the project area.

The impact analyses in the following sections were based on knowledge of the resources and the site, review of existing literature information provided by experts and other agencies, and professional judgment.

4.1 ENVIRONMENTAL CONSEQUENCES OF PROPOSED ACTION

4.1.1 Vegetation

Construction activities would disturb less than 0.1 acre at the proposed catchment site in the long term. The proposed improvements have been designed to minimize impacts to vegetation by restricting construction to the existing catchment footprint, the proposed catchment footprint, and immediate vicinities, which would be mostly to creosotebush, cholla, and ocotillo. In most cases, disturbance to vegetation during construction would consist of the short-term loss of creosotebush, cholla, and ocotillo. No paloverde, ironwood, or saguaros would be impacted by the proposed action. Maintenance and water-hauling activities would intermittently result in minor trampling of vegetation within and adjacent to the proposed catchment site, but the increase in water-storage capacity under the proposed action would reduce the frequency of water-hauling trips.

These impacts would be offset by revegetation efforts. After construction is complete, excavated dirt would be recontoured throughout the disturbed areas. Dead and downed plant material, as well as existing rock debris, would be placed on top of the disturbed area to revegetate and camouflage the catchment area. Any removed topsoil would be replaced and a BLM-approved seed mix would be applied to the area to aid in revegetation. Therefore, any impacts to vegetation would be short term until construction activities are complete and the area is revegetated.

4.1.1.1 Sensitive Species

Saguaro (*Carnegiea gigantea*)

The project area is inhabited by numerous saguaros which were observed during field reconnaissance. The area along the road is less populated with the species because of previous road blading, but they are located in the areas of the existing water catchment and the proposed water catchment. Because of their size, transportability and conspicuous nature, saguaros within the project area that are subject to impact should be identified and relocated. They are protected as salvage restricted under the Arizona Native Plant

Law, and any impact made to the species must be done with a permit. Although the proposed action could have minor impacts to individual saguaros, no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

Emory's Barrel Cactus (*Ferocactus emoryi*)

The AGFD online review tool (AZHGIS 2008) shows that Emory's barrel cactus occurs within 3 miles of the project area. The project area contains hillsides, washes, rocky, sandy soils, and the Sonoran Desertscrub vegetation associated with the species. Although the proposed action could have minor impacts to individual Emory's barrel cactus, no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

4.1.2 Wildlife, Including Migratory Birds and Sensitive Species

Some groups have expressed concern for possible negative impacts to wildlife as a result of artificial water catchment sites. These hypothesized negative impacts include predation, poor water quality, disease transmission, and drowning at water catchment sites, and have been largely discounted in a study of catchment sites in Arizona (Rosenstock et al. 2004). Water is essential for all animals. Wildlife populations in general and desert big horn sheep, mule deer, javelina, and migratory birds in particular depend on reliable water sources. When ambient temperatures are high, it is reasonable to assume that survival and productivity of wildlife could be adversely affected by a lack of water. In arid regions, such as the SDNM, water catchments can be beneficial in combination with adequate foraging areas (Rosenstock et al. 1999). Wildlife will traditionally use water catchments during the hottest, driest months of the year when natural water sources dry up.

Wildlife, migratory birds and sensitive species would likely avoid the area during construction activities, but after construction activities are completed, the catchments would have an increased ability to retain water in times of drought, would directly impact wildlife populations that rely on the catchment by increasing survivability in times of environmental stress.

The loss of vegetation in the proposed catchment area could result in a short-term reduction (impact) of wildlife and migratory bird habitat. The cleared land would directly and indirectly impact wildlife (herpetofauna, mammals, and birds) that uses the project area for forage, migration, and breeding. Removal of the existing Mesquite Well catchment and subsequent restoration would improve wildlife habitat in that area.

4.1.2.1 Migratory Birds

Construction activities would result in a temporary loss of habitat, soil compaction, and construction noise, at each site during catchment improvements. Construction activities would disturb approximately 0.1 acre at the proposed catchment site in the long term; this is a negligible loss of habitat, compared with the relative amount of habitat available in the surrounding landscape. The proposed improvements have been designed to minimize impacts to vegetation by restricting construction to the existing catchment footprint, the proposed catchment footprint, and immediate vicinities, which would be mostly to creosotebush, cholla, and ocotillo. The amount of disturbance to creosotebush, cholla, and ocotillo would be negligible and would not hinder migratory birds' ability to forage. The short-term loss of vegetation at each catchment could result in a short-term reduction of migratory bird habitat. The cleared land would impact migratory birds that use the project area for forage, migration, and breeding by reducing habitat in the area surrounding the catchment. However, the area would be so small, relative to the overall foraging, migration, and breeding habitat and range in the SDNM management area, that impacts from cleared land would be minor.

Short-term impacts to migratory birds during construction of the proposed catchment and removal of the existing catchment, resulting from human presence and noise, could include impacts to individual birds that arrive early to breeding sites and could lead to abandonment of early breeding and/or nesting attempts. Equipment associated with construction may also generally affect migratory birds as a result of soil compaction and noise. The increased noise and construction activity would occur only in the short term. In the long term, occasional water catchment maintenance would have a negligible impact to migratory birds.

Impacts to wildlife and migratory birds will be minimized by timing the proposed construction activity to occur in winter, or early spring, prior to the arrival of migratory birds.

4.1.2.2 Sensitive Species

In general, as with migratory birds, renovation activities would result in a temporary loss of habitat, soil compaction, and construction noise, at each site during catchment improvements. The proposed improvements have been designed to minimize impacts to habitat (vegetation) by restricting construction to the existing catchment footprint, the proposed catchment footprint, and immediate vicinities. The cleared land would impact sensitive species that use the project area for forage, migration, and breeding by reducing habitat in the area surrounding the catchment. However, the area would be so small, relative to the overall foraging, migration, and breeding habitat and range in the SDNM management area, that impacts from cleared land would be minor.

Equipment associated with construction may also generally affect sensitive species as a result of soil compaction and noise. The increased noise and construction activity would occur only in the short term. In the long term, occasional water catchment maintenance would have a negligible impact to sensitive species. Impacts to sensitive species would be minimized by timing the proposed construction activity to occur in winter, or early spring, when wildlife are less dependent on water sources. Specific impacts to sensitive species are detailed below.

Big Free-Tailed Bat (*Nyctinomops macrotis*)

The project area contains desertscrub vegetation and is in the Sand Tank Mountains, where rugged, rocky outcrops and high cliffs have the potential to occur within foraging distance. The project area also contains human-built structures that could be used as roosting sites. The increase in water availability at the new catchment may result in an increase in the population numbers for prey species of big free-tailed bat. Therefore, the proposed action should have a beneficial impact to big-free tailed bat.

California Leaf-Nosed Bat (*Macrotus californicus*)

The project area contains desertscrub vegetation and is in the Sand Tank Mountains, where rock shelters, caves, and abandoned mines have the potential to occur within foraging distance. This species is small-bodied and therefore hypothesized to be better suited to use water catchments for foraging and drinking; it has been documented using them (Herder 1996). The increase in water availability at the new catchment may result in an increase in the population numbers for prey species of California leaf-nosed bat and provide a reliable water source for the species. Therefore, the proposed action should have a beneficial impact to California leaf-nosed bat.

Cave Myotis (*Myotis velifer*)

The project area contains desertscrub vegetation to support the species and is located within the elevational range of the species. The project area is within foraging radius of a known occurrence location in Gila Bend. The increase in water availability at the new catchment may foster an increase in the

population numbers for prey species of cave myotis, and their small size may enable them to use the catchments for water consumption (Herder 1996). Therefore, the proposed action should have a beneficial impact to cave myotis.

Great Plains Toad (*Bufo cognatus*)

Sonoran Desertscrub habitat is present in the project area to support the species. Bender wash bisects the northern section of the project area, which includes floodplain habitat the species may make use of. The presence of a water catchment in the project area will likely enhance habitat for the species for both breeding and foraging, especially since they are known to use cattle tanks. Therefore, the proposed action should have a beneficial impact to Great Plains toad.

Pocketed Free-Tailed Bat (*Nyctinomops femorosaccus*)

The project area contains the desert shrub vegetation associated with the species, and the project area is in the Sand Tank Mountains, which has potential access to high cliffs and rugged rocky outcrops. The increase in water availability at the new catchment may foster an increase in the population numbers for prey species of pocketed free-tailed bat. Therefore, the proposed action should have a beneficial impact to pocketed free-tailed bat.

Sonoran Green Toad (*Bufo retiformis*)

The project area occurs within approximately 15 miles of known locations of this species, and the vegetation associated with this species is also found within the project area. Access to the water catchment would have a beneficial impact to the species for breeding and foraging purposes. Since the species are known to use cattle tanks, it is likely they will use the water catchment. Therefore, the proposed action should have a beneficial impact to pocketed free-tailed bat.

Sonoran Desert Tortoise (*Gopherus agassizii*)

The AGFD online review tool (AZHGIS 2008) shows that Sonoran Desert tortoise have been documented within 3 miles of the project area. Additionally, this project area is located within BLM-designated Category II tortoise habitat, which has a goal to maintain stable, viable populations. Although species were not observed within the project area during field reconnaissance, the project area includes habitat used by the species for foraging and shelter in the form of sandy washes and desert mountain ranges, as well as Sonoran Desertscrub vegetation. Although the proposed action could have minor impacts to individual Sonoran desert tortoise, no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

4.1.3 Recreation

Inconvenience to the recreating public would occur during catchment construction activities, and would include an increase in noise and dust at the proposed catchment site, as well as the reduced ability for users to avoid the sights, sounds, and evidence of other people. The presence of construction equipment and workers would result in a reduced opportunity for solitude in the vicinity of the catchments.

Water catchments provide opportunities for hunters to locate wildlife; construction activities at the existing catchment site and the proposed catchment site may cause wildlife seeking hydration to seek alternate sources of water. However, these disturbances would only last approximately two weeks and would be localized to each catchment location.

Once construction is complete, wildlife would be attracted to the catchments, which would increase opportunities for the recreation to view (and/or hunt) wildlife. Renovation activities would not result in a permanent reduction of recreation choices. Impacts on the natural appearance of the area would be minimized by treating aboveground structures with materials and colors that match or blend in with the surrounding areas. The reduced need for routine maintenance inspections and water-hauling trips would reduce the already minimal recreational distractions caused by maintenance inspection trips and AGFD personnel. Additionally, benefits could result from the removal of the existing Mesquite Well catchment and the restoration of an approximation of the area's prehistoric and historic character. The proposed action would therefore have minor direct and indirect impacts to recreation.

4.1.4 Cultural Resources

Removal of the existing Mesquite Well catchment equipment and infrastructure has the potential to impact cultural resources at this location. The presence of an archaeological monitor during ground-disturbing activities at the existing catchment location would reduce impacts to the site. Therefore, impacts to cultural resources at the existing catchment will be minor in the short and long term.

The NRHP eligible archaeological site recorded south of the existing catchment, along the roadway, will be avoided. No road improvements, either vegetation thinning or blading, will occur within this site; the site will be entirely avoided during construction activities. Short-term indirect impacts could occur at this site, however, as construction and maintenance vehicles use the road for access to the existing and proposed catchments.

4.1.5 Visual Resources

Revegetation efforts and the primarily subsurface catchment components will limit the long-term visual impact, especially because plants will hide most catchment features in the long-term.

Short-term impacts to visual resources associated with the proposed action would occur from the soil and vegetation disturbance during and immediately following construction activities at the existing catchment site and the proposed catchment site. Revegetation efforts and the primarily subsurface catchment components will limit the long-term visual impact, especially because plants will have most catchment features in the long term. Airborne dust would be visible during construction activities at the catchment site because of the increased use of motorized vehicles and equipment, but it would be temporary and would cease once renovation activities have been completed. Design features included in catchment construction would use native materials and/or paint colors that would blend in with the surrounding landscape, and reasonable efforts would be made to transplant/reseed removed vegetation. Installed catchment components would be kept as inconspicuous as possible using the various camouflage techniques described in Chapter 2, to minimize any potential visual impacts; no reflective materials would be used.

The catchments are located in a Class III area; therefore, no Visual Contrast Rating worksheet is necessary for this catchment.

In general, the catchment will be well hidden and generally not visible to the casual observer; all aboveground components would be treated with materials and colors that match or blend with the surrounding area to reduce the visual impacts of the structure. Further, construction activities would increase the ecological value of the area by providing a reliable source of water for wildlife.

The proposed action activities and results may be seen; however, they are not expected to attract the attention of a casual observer. To the extent possible, the basic elements of form, line, color, and texture

found in the predominant natural features of the characteristic landscape would be repeated. Implementing the proposed action is expected to meet VRM Class III management objectives and the VRM standards of the monument.

4.1.6 Wilderness Characteristics

The project would slightly impair the wilderness characteristic of naturalness in the immediate one-acre area of the proposed water development and the 1.5 acres of the project access road. This impairment would result from introducing construction activities, vehicle use, and a permanent new water development. The overall effect on naturalness would be minor on the Sand Tank Wash unit as a whole, and somewhat influence a visitor's perception of naturalness on five acres or so in the valley immediately surrounding the project. Alternatively, the Farley's Cabin area would become more natural over time with the removal of the current water project infrastructure.

The vehicle route to the new project site would be kept as available for project maintenance and potential water hauling in an emergency. This would impact the AWC's proposal to close the road at Farley's Cabin allowing some occasional motorized vehicle use in an area they propose be maintained as roadless and for wilderness characteristics. Vehicle use on this route would directly impact the natural character of 1.5 acres of access road because the road would not be reclaimed in the long-term.

The project would enhance the supplemental values by maintaining native wildlife populations currently present and use the existing wildlife water to the north at Farley's Cabin.

Solitude opportunities would be compromised for a short time at varying intervals due to the sights and sounds of construction, maintenance, and water hauling activities. The longest period of solitude disturbance would be the eight days that are needed for construction. Opportunities for primitive and unconfined recreation would generally not be impacted over the short, mid, or long-term, except for a moderately increased chance to observe Sonoran Desert wildlife like deer, bighorn sheep, and birds.

4.1.7 Cumulative Impacts of Proposed Action

The proposed action would result in less than 1.0 acre of disturbance in the short term. In the long term, disturbance would be less than 0.1 acre. Six additional water catchment renovation projects with similar disturbance areas are known to be planned for the SDNM area. There would be a cumulative impact to wildlife from the improvement of numerous catchments across the SDNM, resulting in the loss of habitat, soil compaction, and noise from construction, as detailed in Section 4.1.2. Minor impacts to the wilderness characteristics of naturalness and opportunities for solitude would occur, but would not impact the area's manageability as a wilderness-characteristic resource.

Adverse, short-term impacts could result from construction activities at each of the six proposed renovation catchment sites; these impacts would be similar to the direct and indirect impacts from the proposed action. Alternatively, long-term benefits could enhance the overall sustainability and viability of wildlife populations in the SDNM over time. The replacement of this catchment would provide more reliable, durable, and efficient catchments that would cumulatively contribute to the benefits of permanent water sources for vulnerable wildlife species, especially during times of prolonged drought or particularly dry (limited precipitation) years.

4.2 ENVIRONMENTAL CONSEQUENCES OF THE NO-ACTION ALTERNATIVE

4.2.1 Vegetation

Under the no-action alternative, no additional disturbances would occur at the existing catchments, although periodic water hauling to, and maintenance of, the existing facilities would intermittently result in minor trampling of vegetation adjacent to the existing catchment sites and would provide additional opportunities for the spread of invasive-species seed. However, since these areas are already disturbed, new impacts would be negligible.

4.2.1.1 Sensitive Species

Saguaro (*Carnegiea gigantea*)

The project area is inhabited by numerous saguaros which were observed during field reconnaissance. The area along the road is less populated with the species because of previous road blading, but they are located in the area of the existing water catchment. Saguaros are protected as salvage restricted under the Arizona Native Plant Law, and any impact made to the species must be done with a permit; however no impacts to saguaro are expected for these routine water-hauling and maintenance trips. Therefore there will be no impacts beyond current conditions under the no-action alternative, and no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

Emory's Barrel Cactus (*Ferocactus emoryi*)

The catchment area contains hillsides, washes, rocky, sandy soils, and Sonoran Desert scrub vegetation associated with this species. Emory's barrel cacti are protected as salvage restricted under the Arizona Native Plant Law, and any impact made to the species must be done with a permit; however no impacts to saguaro are expected for these routine water-hauling and maintenance trips. Therefore there will be no impacts beyond current conditions under the no-action alternative, and no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

4.2.2 Wildlife, Including Migratory Birds and Sensitive Species

Under the no-action alternative, no construction activities and, therefore, no additional ground disturbance would occur. Periodic water hauling to, and maintenance of, the existing Mesquite Well would intermittently result in minor, temporary disturbances to wildlife.

4.2.2.1 Migratory Birds

Under the no-action alternative, no construction activities and, therefore, no additional ground disturbance would occur. As a result, there would be no additional loss of habitat, beyond the loss that resulted from construction of the existing catchments. Opportunities for migratory birds to forage, migrate, or breed are not likely to be impacted because no construction activity or ground disturbance would occur.

Periodic water hauling to, and maintenance of, the existing facilities would intermittently result in minor, temporary disturbances to wildlife from human presence (i.e., noise) at each catchment. However, these disturbances do not exceed current conditions.

4.2.2.2 Sensitive Species

There would be no construction activities resulting in additional ground disturbance under the no-action alternative; therefore, no sensitive species habitat would be affected. Wildlife in the region rely on this catchment as a supplemental water source, particularly during times of drought. As the catchment continues to deteriorate, there could be an increase in water hauling and maintenance trips to the catchment and an associated increase in temporary disturbances to wildlife.

Periodic water hauling to, and maintenance of, the existing facilities could result in short-term disturbance to some sensitive species; potential impacts to these species are discussed below. Disturbance to foraging could result from increased human presence and motorized travel and its effects, such as noise, ground vibration, and minor trampling of vegetation from motorized travel. These disturbances would only be temporary, and the individual animals would resume their activities as soon as water-hauling and maintenance actions are completed.

Big Free-Tailed Bat (*Nyctinomops macrotis*)

The catchment does contain human-built structures that could be used as roosting sites; also, it may be used during foraging activities. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Therefore, the no-action alternative would have a beneficial impact to big free-tailed bat as long as routine maintenance and water hauling continue.

California Leaf-Nosed Bat (*Macrotus californicus*)

The catchment does not contain suitable roosting habitat; however, it may be used during foraging activities. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Therefore, the no-action alternative would have a beneficial impact to California leaf-nosed bat as long as routine maintenance and water hauling continue.

Cave Myotis (*Myotis velifer*)

The catchment does not contain suitable roosting habitat; however, it may be used during foraging activities. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Routine maintenance and water hauling are needed to continue use of these catchments and continue to increase the amount of moths in the area. Therefore, the no-action alternative would have a beneficial impact to cave myotis as long as routine maintenance and water hauling continue.

Great Plains Toad (*Bufo cognatus*)

The project area does include floodplain habitat the species may make use of for foraging and breeding. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Routine maintenance and water hauling are needed to continue use of these catchments and continue to increase the amount of insects in the area. The no-action alternative would have a beneficial impact to the Great Plains toad as long as routine maintenance and water hauling continue.

Pocketed Free-Tailed Bat (*Nyctinomops femorosaccus*)

The catchment does contain human-built structures that could be used as roosting sites; also, it may be used during foraging activities. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Therefore, the no-action alternative would have a beneficial impact to pocketed free-tailed bat as long as routine maintenance and water hauling continue.

Sonoran Green Toad (*Bufo retiformis*)

Vegetation associated with this species is found within the existing catchment area. The species are known to use cattle tanks; it is likely they also use water catchments for breeding and foraging purposes. The existing catchment has supplemented water availability in the area around the catchment; however, the water supply can be unreliable due to deterioration of the catchment and its ability to store water. Routine maintenance and water hauling are needed to continue use of these catchments and continue to increase the amount of arthropods used for foraging in the area. The no-action alternative would have a beneficial impact to the Sonoran green toad as long as routine maintenance and water hauling continue.

Sonoran Desert Tortoise (*Gopherus agassizii*)

Impacts may occur to Sonoran Desert tortoise if routine maintenance and water-hauling trips impact the habitat of the species or causes a reduction of plants and vegetation used for foraging through vegetation and understory trampling. Implementation of the no-action alternative carries the continued risk of drowning due to the lack of measures to provide an adequate escape route if individuals of the species fall into the tank. Although the no-action alternative could have minor impacts to individual Sonoran Desert tortoise, there will be no impacts beyond current conditions, and no impacts to the species (i.e., a trend toward Federal listing or loss of viability) are expected.

4.2.3 Recreation

Mesquite Well is located behind a restricted access gate but free access permits are available from the BLM. Recreation is directly affected because visitors are drawn to the location because of an existing standing structure (Tom Farley's cabin), located 100 to 200 feet west of the existing catchment; therefore, recreation in the vicinity of Mesquite Well is likely more intense than it would be if the catchment and cabin did not exist. Alternatively, visitors interested in wildlife for sightseeing and hunting purposes would indirectly benefit from the water hauling as a result of the maintenance of wildlife populations in the Sand Tank Mountains.

4.2.4 Cultural Resources

The two cultural sites that were eligible for the NRHP would be threatened by project activities. The SR 84 Casa Grande Highway segment has a road bed, asphalt paving elements, and original grading all still present with good integrity. If the equipment necessary to remove the catchment equipment is not over-size or over-weight, driving over this segment of the highway site will not impact the characteristics that make it eligible for the NRHP. Vehicles of normal weight and size will not impact this site as they cross over. Any over-weight equipment that needs to access the site and cross this highway segment could do so, only if additional protective measures were employed to avoid damage to this site. Large or heavy equipment may threaten the integrity of the asphalt surface by cracking and breaking it.

The Mesquite Well site has prehistoric and historic features and artifacts present. Removal of the catchment equipment would threaten the integrity of the features and artifacts. Rearrangement of artifacts,

damage to historic features may threaten the characteristics that make this site eligible for the NRHP. An archaeological monitor, therefore, would be required to flag a route across the site and avoid impacts to the features and artifacts.

Cultural resources could continue to be affected by the no-action alternative, particularly if hauling water to the existing catchment continues or increases. Vehicular trips associated with the hauling of water to the existing Mesquite Well catchment, as well as recreational activities, could impact the prehistoric and historic period archaeological site located at the catchment as well as the archaeological sites located along the roadway. Most of the disturbance to these sites, particularly the site at Mesquite Well, occurred during the original construction of the catchment and regular use of the access road.

4.2.5 Visual Resources

Visual impacts of the existing Mesquite Well catchment include the existing aboveground structures and vehicle activity associated with water hauling and maintenance. The existing Mesquite Well catchment does not currently meet VRM standards. If the no-action alternative were selected, the existing storage tanks would be painted appropriate desert colors to meet VRM standards.

4.2.6 Wilderness Characteristics

No impacts to wilderness characteristics present in the proposed Sand Tank West or Blue Plateau unit are documented under the no-action alternative. The values of naturalness and opportunities for outstanding solitude would remain unchanged.

4.2.7 Cumulative Impacts of No-Action Alternative

Additional water catchment renovation projects are known to be planned for the SDNM. Adverse, short-term impacts could result from construction activities at proposed improvements to other catchments in the region; these impacts would be similar to the direct and indirect impacts from the proposed action. Additionally, there could be long-term, cumulatively adverse impacts as these catchments begin to fail altogether. If the existing catchments all failed, and were not replaced, there is the potential for vulnerable wildlife species in the area to suffer increasing mortality, reduced productivity, and reduced animal distribution across the landscape.

Under the no-action alternative, the cultural site would continue to be threatened by vehicle use over and in close proximity to site features. The presence of the wildlife water equipment would continue to attract additional public visitation, thereby encouraging increasing vehicle intrusion onto site features. Vehicle intrusion from agency staff would add to the degradation of some of the site features. The likelihood of new and continuing degradation to the site would be assured.

Chapter 5

CONSULTATION AND COORDINATION

5.1 PUBLIC PARTICIPATION

A visit to the proposed and existing catchment locations was conducted on January 17, 2008. Members of the Arizona Zoological Society, Sierra Club, Wilderness Society, Arizona Wilderness Coalition, Arizona Bighorn Sheep Society, BLM, AGFD, and SWCA attended the meeting. Representatives of the AGFD and BLM discussed the proposed action with attendees as well as the reasons for the proposed action (relocation) of the catchment

This EA will be posted on the BLM's Arizona Web site for a 30-day public review and comment period. In addition, appropriate agencies and interested nongovernmental organizations will be notified that the EA was posted on the BLM's Arizona Web site.

5.2 AGENCIES CONSULTED

Joseph Currie, Phoenix Office, AGFD

Dan Urquidez, Yuma Office, AGFD

5.3 TRIBAL CONSULTATION

Formal consultation was initiated by letter in April of 2009 to five tribes: Tohono O'odham Nation, Ak-Chin Indian Community, Salt River Pima-Maricopa Indian Community, and the Hopi Tribe. The letter provided a description of the project, an overview of the cultural resources survey, a request for comments, and an offer of a tour of the area. Follow-up telephone calls were made to the cultural staff at each tribal office. A letter from the Hopi Tribe expressed cultural affiliation to the Hohokam prehistoric people of the southern SDNM and agreed that the removal of the water development infrastructure would not impact the sites at a major level. The Hopi Tribe expressed the desire to be kept informed if major impacts could not be avoided. In June of 2009, a telephone conversation with the cultural staff of the Tohono O'odham Nation was documented. Tohono O'odham elders were taken out to the field location to see the area. Several elders were familiar with the area and expressed that they had no concerns with the project. They were satisfied that an archaeological monitor would be present as the work was being done. A telephone call from cultural staff at Ak-Chin Indian Community was also received in June of 2009. The Ak-Chin expressed that they had no concerns about moving the catchment off of the site at Mesquite Well. Staff at Salt River Pima-Maricopa Indian Community requested a copy of the original letter be emailed to him. He had an opinion that the SRPMIC would probably defer to the Tohono O'odham Nation. The staff at BLM emailed a copy of the letter and a copy of the enclosure tribal distribution list.

5.4 LIST OF PREPARERS

Table 5.1. BLM EA Preparers/Reviewers

Name	Agency/Organization	Title
Steve Bird	Sonoran Desert National Monument, BLM	Natural Resource Specialist
Cheryl Blanchard	BLM	Archaeologist
Rich Hanson	Sonoran Desert National Monument, BLM	Monument Manager
Karen Kelleher	Sonoran Desert National Monument, BLM	Monument Manager
Lori Young	Sonoran Desert National Monument, BLM	Natural Resource Specialist
Leah Baker	Phoenix District Office, BLM	Planning and Environmental Coordinator

Table 5.2. Non-Federal Agency EA Preparers/Reviewers

Name	Agency/Organization	Title
Cara Bellavia	SWCA Environmental Consultants	Project Manager/Environmental Planner
James Feldmann	SWCA Environmental Consultants	Environmental Planner
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Chapter 6

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Appendix A

DESERT TORTOISE HANDLING GUIDELINES

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES
ENCOUNTERED ON DEVELOPMENT PROJECTS

Arizona Game and Fish Department

Revised October 23, 2007

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

The Sonoran population of desert tortoises occurs south and east of the Colorado River. Tortoises encountered in the open should be moved out of harm's way to adjacent appropriate habitat. If an occupied burrow is determined to be in jeopardy of destruction, the tortoise should be relocated to the nearest appropriate alternate burrow or other appropriate shelter, as determined by a qualified biologist. Tortoises should be moved less than 48 hours in advance of the habitat disturbance so they do not return to the area in the interim. Tortoises should be moved quickly, kept in an upright position parallel to the ground at all times, and placed in the shade. Separate disposable gloves should be worn for each tortoise handled to avoid potential transfer of disease between tortoises. Tortoises must not be moved if the ambient air temperature exceeds 40° Celsius (105° Fahrenheit) unless an alternate burrow is available or the tortoise is in imminent danger.

A tortoise may be moved up to one-half mile, but no further than necessary from its original location. If a release site, or alternate burrow, is unavailable within this distance, and ambient air temperature exceeds 40° Celsius (105° Fahrenheit), the Department should be contacted to place the tortoise into a Department-regulated desert tortoise adoption program. Tortoises salvaged from projects which result in substantial permanent habitat loss (e.g. housing and highway projects), or those requiring removal during long-term (longer than one week) construction projects, will also be placed in desert tortoise adoption programs. *Managers of projects likely to affect desert tortoises should obtain a scientific collecting permit from the Department to facilitate temporary possession of tortoises.* Likewise, if large numbers of tortoises (>5) are expected to be displaced by a project, the project manager should contact the Department for guidance and/or assistance.

Please keep in mind the following points:

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

Appendix B

SENSITIVE SPECIES

Table B-1. Federally Listed Species Potentially Occurring in Maricopa County, Arizona

Range or habitat information is from: Heritage Data Management System (HDMS 2008); USFWS Arizona Ecological Services Field Office (USFWS 2008); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Arizona cliffrose (<i>Purshia subintegra</i>)	USFWS E	Found in rolling limestone hills within Sonoran Desertscrub, usually on white Tertiary limestone lakebed deposits high in lithium, nitrates, and magnesium at elevations between 2,500 and 4,000 feet. All four localities of this species are in central Arizona below the Mogollon Rim and include Burro Creek drainage (Mohave County); Horseshoe Lake (Maricopa County); Verde Valley (Yavapai County); and the San Carlos Indian Reservation (Graham County).	Unlikely to occur. The project area is outside the known geographic and elevational range of the species.	No effect.
Bald eagle (<i>Haliaeetus leucocephalus</i> [desert population])	USFWS T	Nesting sites are usually isolated, located high in trees or on cliffs that are close to water. A small, resident population of approximately 40 pairs nests along the Salt, Verde, Gila, Bill Williams, Agua Fria, San Pedro, and San Francisco rivers and along Tonto and Canyon creeks. At least 200 to 300 winter each year throughout Arizona, with the greatest numbers found along the Mogollon Rim east through the White Mountains.	Unlikely to occur. There are no major rivers or reservoirs within foraging distance of the species. The closest known record of occurrence is over 80 miles away below the Bartlett Reservoir on the Verde River.	No effect.
California brown pelican (<i>Pelicanus occidentalis californicus</i>)	USFWS E	Found in coastal areas, with nesting occurring on islands. Most Arizona records are of transients along the Colorado River north to Davis Dam, Lake Mead, and the Gila River valley, but stragglers reach most of the state (Tolani lakes, Navajo Indian Reservation, Salt River, and other areas).	Unlikely to occur. There are no coastal areas or aquatic systems capable of supporting the species in the project area.	No effect.
Desert pupfish (<i>Cyprinodon macularius</i>)	USFWS E	Found in shallow waters of desert springs, small streams, and marshes at elevations below 5,000 feet. One natural population still occurs in Quitobaquito Spring and Quitobaquito Pond in Pima County, and reintroductions have been made in Pima, Pinal, Maricopa, Graham, Cochise, La Paz, and Yavapai counties in Arizona. New introductions continue.	Unlikely to occur. There are no marshes or aquatic systems capable of supporting the species in the project area.	No effect.
Gila chub (<i>Gila intermedia</i>)	USFWS E	Normally found in smaller headwater streams, cienegas, and springs or marshes of the Gila River Basin at elevations between 2,720 and 5,420 feet.	Unlikely to occur. There are no headwater streams, cienegas, or other aquatic systems capable of supporting the species in the project area.	No effect.
Gila topminnow (<i>Poeciliopsis occidentalis occidentalis</i>)	USFWS E	Occurs in small streams, springs, and cienegas at elevations below 4,500 feet, primarily in shallow areas with aquatic vegetation and debris for cover. In Arizona, most of the remaining native populations are in the Santa Cruz River system.	Unlikely to occur. There are no cienegas or aquatic systems capable of supporting the species in the project area.	No effect.

Table B-1. Federally Listed Species Potentially Occurring in Maricopa County, Arizona (Continued)

Range or habitat information is from: Heritage Data Management System (HDMS 2008); USFWS Arizona Ecological Services Field Office (USFWS 2008); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuena</i>)	USFWS E	Found in southern Arizona from the Picacho Mountains southwesterly to the Agua Dulce Mountains and southeasterly to the Galiuro and Chiricahua mountains at elevations between 1,600 and 11,500 feet. Roosts in caves, abandoned mines, and unoccupied buildings at the base of mountains where agave, saguaro, and organ pipe cacti are present. Forages at night on nectar, pollen, and fruit of paniculate agaves and columnar cacti. The foraging radius of <i>Leptonycteris</i> bats may be 30 to 60 miles or more.	Unlikely to occur. There is limited foraging and roosting habitat in the project area, and the nearest known geographic location of the species is approximately 55 miles away in the Picacho Mountains. Although the project area is within the possible foraging radius of the species, the foraging habitat is unlikely to be desirable enough to attract the species across such a great distance.	No effect.
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	USFWS T	Found in mature montane forests and woodlands and steep, shady, wooded canyons. Can also be found in mixed-conifer and pine-oak vegetation types. Generally nests in older forests of mixed conifers or ponderosa pine– Gambel oak. Nests in live trees on natural platforms (e.g., dwarf mistletoe brooms), snags, and on canyon walls at elevations between 4,100 and 9,000 feet.	Unlikely to occur. There are no montane forests or woodlands in the project area, and the elevational range of the species is outside the project area.	No effect.
Razorback sucker (<i>Xyrauchen texanus</i>)	USFWS E	Found in backwaters, flooded bottomlands, pools, side channels, and other slower-moving habitats at elevations below 6,000 feet. In Arizona, populations are restricted to Lakes Mohave and Mead and the lower Colorado River below Havasu in the Lower Basin. In the Upper Basin, small remnant populations are found in the Green, Yampa, and main stem Colorado rivers.	Unlikely to occur. There are no backwaters, bottomlands, or aquatic systems capable of supporting the species in the project area.	No effect.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	USFWS E	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder, tamarisk, Russian olive, buttonbush, and arrowweed are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet.	Unlikely to occur. There is no dense riparian habitat in the project area to support the species.	No effect.
Woundfin (<i>Plagopterus argentissimus</i>)	USFWS E	Found in shallow, warm, turbid, fast-flowing rivers at elevations below 4,500 feet. Extirpated from almost all of its historical range except the main stem Virgin River, from Pah Tempe Springs to Lake Mead in northwestern Arizona. In Arizona, Critical Habitat accounts for approximately 31.6 miles of the main stem Virgin River and its 100-year floodplain in Mohave County, Arizona. Experimental-nonessential designation in portions of the Verde, Gila, San Francisco, and Hassayampa rivers and Tonto Creek.	Unlikely to occur. There are no aquatic systems capable of supporting the species in the project area.	No effect.

Table B-1. Federally Listed Species Potentially Occurring in Maricopa County, Arizona (Continued)

Range or habitat information is from: Heritage Data Management System (HDMS 2008); USFWS Arizona Ecological Services Field Office (USFWS 2008); *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.); and Corman and Wise-Gervais (2005).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Effect
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	USFWS C	Typically found in riparian woodland vegetation (cottonwood, willow, or tamarisk) at elevations below 6,600 feet. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde river drainages and Cienega and Sonoita creeks.	Unlikely to occur. There is no riparian woodland vegetation in the project area.	No effect.
Yuma clapper rail (<i>Rallus longirostris yumanensis</i>)	USFWS E	In Arizona, found in freshwater marshes often dominated by cattails, bulrushes, and sedges at elevations below 4,500 feet. The range includes the Colorado River from Lake Mead to Mexico; the Gila and Salt rivers upstream to the area of the Verde confluence; Picacho Reservoir; and the Tonto Creek arm of Roosevelt Lake. This species may be expanding into other suitable marsh habitats in western and central Arizona.	Unlikely to occur. There are no freshwater marshes in the project area.	No effect.

***USFWS Status Definitions:**

C = Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because they are precluded by other listing activity that is a higher priority. This listing category has no legal protection.

E = Endangered. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

T = Threatened. The ESA specifically prohibits the take of a species listed as threatened. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Acuña cactus (<i>Echinomastus erectocentrus</i> var. <i>acuíensis</i>)	C	Restricted range occurring on well-drained knolls and gravel ridges between major washes, on granite soils in Sonoran Desertscrub association. Occurs at elevations between 1,300 and 3,610 feet.	Unlikely to occur. Although HDMS (2008) reports that potential habitats exist in the Barry M. Goldwater Range, the area of the range in which the project area occurs does not contain major washes with gravel ridges and knolls.	No impact.
Allen's (Mexican) big-eared (lappet-browed) bat (<i>Idionycteris phyllotis</i>)	S	Coniferous woodlands of Mexico north to Arizona and New Mexico from 1,320 to 9,800 feet, as well as arid, non-forested habitats. Day roosts may include rock shelters, caves, trees, and mines. Their main food source is small moths gleaned from surfaces or in flight.	Unlikely to occur. Although potential foraging habitat is present for this species, they are not known to inhabit southwestern Arizona, and the nearest location of their occurrence is over 150 miles away.	No impact.
Arizona Sonoran rosewood (<i>Vauquelinia californica sonorensis</i>)	S	Desertscrub and desert grassland, in woodland or forest at base of cliffs, along canyon bottoms and on moderate to steep slopes between 2,328 and 3,720 feet. Grows on rocky slopes of hillsides and canyons on a variety of substrates.	Unlikely to occur. Desertscrub vegetation is present in the project area, but the project area is located outside the elevational range of the species and there are not many steep slopes or hillsides in the area.	No impact.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area (Continued)

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Banded Gila monster (<i>Heloderma suspectum cinctum</i>)	S	In Arizona found mainly in the northwest, in Sonoran Desert undulating rocky foothills, bajadas, and canyons at elevations from sea level to 5,000 feet; less frequently found in open, sandy areas.	Unlikely to occur. There are no major bajadas or canyons in the project area, and the nearest documented occurrences of the species are more than 100 miles west and north of the project area.	No impact.
Big free-tailed bat (<i>Nyctinomops macrotis</i>)	S	Rugged, rocky country and riparian areas throughout most of Arizona from 1,810 to 8,475 feet. Forage mainly on flying insects and moths.	May occur. Although they are not documented in Maricopa County, the species is widespread throughout the state, and the project area is within the elevational range of the species. The presence of a new water catchment may potentially increase foraging habitat for the species.	Beneficial impact.
Cactus ferruginous pygmy owl (<i>Glaucidium brasilianum cactorum</i>)	S	Has occurred in streamside cottonwoods and willows and adjacent mesquite bosques, usually with saguaros on nearby slopes in Arizona. Less often it has been found along dry washes where large mesquite, paloverde, ironwood, and saguaro thrive. Found at elevations between 1,300 and 4,000 feet.	Unlikely to occur. Habitat in the form of streamside cottonwoods, willows, and mesquite bosques is not present in the project area. The existing washes do contain the other vegetation specified, but the nearest location of the species is more than 60 miles south of the project area.	No impact.
California leaf-nosed bat (<i>Macrotus californicus</i>)	S	Mostly found in Sonoran Desert scrub. Primarily roost in mines, caves, and rock shelters. Nocturnal roosts include a variety of human-made structures, rock shelters, and mines between elevations of 160 and 3,980 feet. Species is known to forage over water catchments (Herder 1996).	May occur. Nocturnal roosts and foraging habitat occur within the project area, and there are many documented occurrences in the vicinity of the project area, the closest is approximately 10 to 20 miles to the south. There is a potential increase in foraging habitat with the presence of a new water catchment.	Beneficial impact.
Canyon spotted whiptail (<i>Cnemidophorus burti</i>)	S	Mountain canyons, arroyos, and mesas in arid and semi-arid regions, entering lowland desert along stream courses. Found in dense shrubby vegetation, often among rocks near permanent and intermittent streams. Found from near sea level to around 4,500 feet.	Unlikely to occur. There are no permanent or intermittent stream courses on the project area that would support the species.	No impact.
Cave myotis (<i>Myotis velifer</i>)	S	Desertscrub vegetation with colonial roosts in caves, tunnels, and mine shafts and under bridges in the southern portion of Arizona and south to Mexico at elevations between 300 and 5,000 feet. It is estimated that this species can have a home range of up to 900 square miles.	May occur. The project area contains the desertscrub vegetation associated with the species, and the species occurs near Gila Bend, which is approximately 25 miles away; thus, this species could potentially use this area to forage. However, there are no roost sites in the project area. There may be a potential increase in foraging habitat with the presence of a new water catchment.	Beneficial impact.
Common chuckwalla (<i>Sauromalus ater</i>)	S	Creosote bush desert near lava flows, rocky hillsides, and rock outcrops in the southwestern U.S. and also in Mexico at elevations from sea level to 6,000 feet (Stebbins 2003).	Unlikely to occur. There are no rocky hillsides or rock outcrops in the project area, and known locations of the species are not near the project area.	No impact.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area (Continued)

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Desert rosy boa (<i>Charina trivirgata gracia</i>)	S	In Arizona, found mainly on the west side of the state in rocky areas in desert ranges, especially in canyons with permanent to intermittent streams at elevations between sea level and 5,000 feet. Basalt, granite soils.	Unlikely to occur. There are no known locations of the species near the project area, and there are no canyons with permanent to intermittent streams in the project area.	No impact.
Desert sucker (<i>Catostomus clarki</i>)	S	Found in rapids and flowing pools of streams and rivers primarily over bottoms of gravel-rubble with sandy silt in the interstices. Adults live in pools, moving at night to swift riffles and runs to feed. Young inhabit riffles throughout the day, feeding on midge larvae. Found at elevations between 480 and 8,840 feet.	Unlikely to occur. There are no permanent rapids or flowing rivers in the project area.	No impact.
Fringed myotis (<i>Myotis thysanodes</i>)	S	Desert and steppe areas in close vicinity of woodlands; roost sites located in caves, mine tunnels, and buildings in western North America at elevations between 4,000 and 8,280 feet.	Unlikely to occur. The project area is found outside the elevational range of this species.	No impact.
Greater western mastiff bat (<i>Eumops perotis californicus</i>)	S	Lower and upper Sonoran Desert scrub near cliffs. Prefer rugged, rocky canyons with abundant crevices at elevations from 240 to 8,475 feet. Prefer crowding into tight crevices 1 foot or more deep and 2 inches or more wide. Colonies prefer deeper crevices, to 10 or more feet.	Unlikely to occur. Although foraging and roosting habitat do potentially exist in the project area, there are no rugged, rocky canyons in the project area, and known occurrences for the species are at least 100 miles to the east.	No impact.
Great Plains toad (<i>Bufo cognatus</i>)	S	In Arizona, the species is widespread, except for the higher mountains and lowest and driest portions of the Sonoran Desert. Found primarily in valleys, mesas, and flats characterized by Sonoran, Chihuahuan, or Great Basin desert scrub; grasslands; and sparingly into montane woodlands. Within these communities, this species can often be found in cattle tanks, roadside ditches, and canals in agricultural areas, and in the floodplains of rivers and streams, cienegas, and other wetland types (AZPARC 2008).	May occur. The Sonoran Desert scrub habitat is present in the project area to support the species. The presence of a water catchment in the project area will likely enhance habitat for the species for both breeding and foraging, especially since they are known to use cattle tanks.	Beneficial impact.
Kofa Mountain barberry (<i>Berberis harrisoniana</i>)	S	Andesite- and rhyolite-derived soils at the bottoms of deep, rocky canyons at elevations between 2,200 and 3,500 feet.	Unlikely to occur. There are no deep, rocky canyons in the project area, and the project area is below the elevational range of this species.	No impact.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	S	Open country with scattered trees and shrubs, savanna, desert scrub, and occasionally open woodland. Often found on poles, wires, or fence posts. Elevational range information unknown.	Unlikely to occur. The project area is not in or near the open country that this species forages in and prefers.	No impact.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area (Continued)

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Longfin dace (<i>Agosia chrysogaster</i>)	S	Wide-ranging from intermittent hot low-desert streams to clear and cool brooks at higher elevations. Tend to occupy relatively small or medium-sized streams, with sandy or gravelly bottoms; eddies, pools near overhanging banks, or other cover. Usually in water less than 0.6 foot deep with moderate velocities of around 1.1 feet per second. Rarely abundant in large streams or above 5,000 feet. Generally found in water less than 75°F, but are tolerant of high temperatures and low dissolved oxygen. During low water, they may take refuge in moist detritus and algal mats. Found at elevations generally less than 4,900 feet, but have been recorded ranging to 6,700 feet.	Unlikely to occur. There are no suitable aquatic habitats in the project area.	No impact.
Lowland burrowing treefrog (<i>Pternohyla fodiens</i>)	S	Associated with xeric environments, where it lives in burrows in low open mesquite grasslands, usually associated with major washes and arroyos that help form the large mesquite bosques. Seems to prefer at elevations from 1,930 to 2,480 feet in Arizona.	Unlikely to occur. The project area is located below the elevational range of the species, and there are no mesquite bosques or grasslands in the project area.	No impact.
MacNeill sooty wing skipper (<i>Hesperopsis graciellae</i>)	S	Found along drainages of the lower Colorado River where quailbush (<i>Atriplex lentiformis</i>) is present.	Unlikely to occur. There are no drainages with quailbush in the project area.	No impact.
Maricopa tiger beetle (<i>Cicindela oregona maricopa</i>)	S	Found in several different habitats within its range but most commonly on sandy stream banks and less commonly on gravels and clays along stream banks. May occur near seeps or reservoir banks. Found at elevations from 1,092 to 6,940 feet.	Unlikely to occur. The project area contains ephemeral drainages that are moist so infrequently that they would most likely not support the species.	No impact.
Peregrine falcon (<i>Falco peregrinus</i>)	S	Inhabits areas where sufficient prey is found near cliffs. Optimum habitat is generally considered to be steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance. Also found breeding in less optimal habitat; either small broken cliffs in ponderosa pine forest or large, sheer cliffs in very xeric areas. Presence of an open expanse is critical. Birds use areas from around 400 feet along the lower Colorado River to 9,000 feet along the Mogollon Rim.	Unlikely to occur. Although areas of the project area are located in the Sand Tank Mountains, the species is not known to occur in that area. The nearest documented location is approximately 65 miles northeast near Phoenix. Also, the mountains near the project area are not severely steep and sheer and are less likely to attract the species.	No impact.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area (Continued)

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Pocketed free-tailed bat (<i>Nyctinomops ferrosaccus</i>)	S	May be found in a variety of vegetation associations, including desert shrub and pine-oak forests. Habitat includes arid high cliffs and rugged, rocky outcrops in southwestern U.S. and central Mexico at elevations between 190 and 7,520 feet; roost sites include rock crevices and human-built structures.	May occur. Vegetation within the project area contains desert shrub species and nearby rugged, rocky outcrops. Although there are no immediate nearby known occurrences of the species, potential roost sites are present in the project area in the form of human-built structures. There may be a potential increase in foraging habitat with the presence of a new water catchment, as their diet mainly includes large moths and other flying insects.	Beneficial impact.
Red bat (<i>Lasiurus borealis</i>)	S	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 and winter. Primarily roosts in cottonwood trees. Cottonwood distribution throughout the range is thought to determine the ability to complete this species' annual migration. Elevational range is 1,900 to 7,200 feet.	Unlikely to occur. The project area is outside the elevational range of the species, and there are no suitable trees in which to roost. Saguaros are present in the project area, but it is doubtful they are enough to attract the species.	No impact.
Saguaro (<i>Carnegiea gigantea</i>)	S	Found in but not all parts of the Sonoran Desert. Range limited by elevation and freezing temperatures in winter. Generally found growing between sea level and approximately 4,000 feet. Saguaros growing higher than 4,000 feet are usually found on south-facing slopes. Also found on desert slopes and flats, especially rocky bajadas.	Known to occur. Saguaro cacti were observed during field reconnaissance in both the existing and proposed water catchment locations. The road buffer section of the project area has been previously cleared and has fewer saguaros near the road.	May impact individuals, but is not likely to result in a trend toward federal listing or loss of viability.
Sonoran green toad (<i>Bufo retiformis</i>)	S	Found in south-central Arizona. Inhabit rain pools, wash bottoms, and areas near water in semi-arid mesquite-grassland, creosotebush desert, and upland desertscrub at elevations in Arizona from 500 to 3,225 feet.	May occur. The project area occurs within approximately 15 miles of known locations of this species, and the vegetation associated with this species is also found within the project area. Access to the water catchment this would have a beneficial impact on the species for breeding and foraging purposes.	Beneficial impact.
Southern yellow bat (<i>Lasiurus ega</i>)	S	A neotropical species that reaches the United States, including southern Arizona. Typically associated with trees (BISON-M 1997), is tree-roosting, and often roosts individually on the bark of trees. In urban areas of Tucson and Phoenix, preferred habitat is Washington fan palms (Hoffmeister 1986). Old palm fronds most likely beneficial for daytime roosting structure for this species.	Unlikely to occur. Although this species is known to occur in southern Arizona, it is often associated with palm trees. The trees found within the project area are typical of the Arizona Upland division of Sonoran Desertscrub vegetation, which includes trees, but those that are less likely to support the species. No palm trees are found in the project area.	No impact.

Table B-2. BLM Sensitive Species Potentially Occurring in the Lower Sonoran Field Office Area (Continued)

Unless otherwise noted, range or habitat information is from the following sources: HDMS (2008); and *Arizona Rare Plant Field Guide* (Arizona Rare Plant Committee n.d.).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Spotted bat (<i>Euderma maculatum</i>)	S	Dry, rough desertscrub, less common in ponderosa pine forest. Found from low desert in southwestern Arizona to high desert and riparian habitats in northwestern Arizona and Utah and conifer forests in northern Arizona. Might prefer to roost singly in crevices and cracks in cliff faces and cliffs. Water sources are characteristic of localities in which it occurs. Specimen localities in Arizona range from elevations of 110 to 8,670 feet.	Unlikely to occur. Although this species inhabits many vegetation associations, some of which are present in the project area, there are no nearby occurrences for this species, and the nearest known occurrence is approximately 70 miles away.	No impact.
Tucson shovel-nosed snake (<i>Chionactis occipitalis klauberi</i>)	S	Found in arid deserts with sandy washes, dunes, and rocky hillsides. Prefers areas with scattered mesquite-creosote bush at elevations between 0 and 4,700 feet. Current range includes portions of Pima, Pinal, and Maricopa counties.	Unlikely to occur. Mesquite and creosote bush vegetation are present in the project area but not in the form of habitat the species prefers, and the substrate found in the project area is not suitable for this species.	No impact.
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	S	Grasslands, pastures, coastal dunes, desertscrub, edges of agricultural fields, and other human areas where there is sufficient friable soil for a nesting burrow from 650 to 6,140 feet.	Unlikely to occur. The project area does not contain enough flat open space to accommodate the species, and there is not a prevalence of burrows and friable soil in the project area.	No impact.

*BLM Status Definition

C = Candidate. Candidate species are those for which USFWS has sufficient information on biological vulnerability and threats to support proposals to list as endangered or threatened under the ESA. However, proposed rules have not yet been issued because they are precluded by other listing activity that is a higher priority. This listing category has no legal protection.

S = Sensitive. A species proven to be imperiled in at least part of its range and documented or considered likely to occur on BLM lands.

Table B-3. State-Listed Species Potentially Occurring in the Project Area

Unless otherwise noted, range or habitat information is from the following source: HDMS (2008).

Common Name (Species Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Project Area	Determination of Impact
Emory's barrelcactus (<i>Ferocactus emoryi</i>)	SR	Found on hillsides, washes, alluvial fans, mesas, or flats, on gravelly rocky or sandy soils, rocky slopes and adjacent bajadas. Associated vegetation is Sonoran Desertscrub, up to 3,600 feet in elevation in Arizona and Sonora, Mexico (Flora of North America 2008).	May occur. The AGFD online review tool (AZHGIS 2008) shows that the species occurs within 3 miles the project area. The species was not detected during field reconnaissance, but habitat that supports the species is present in the project area.	May impact individuals, but is not likely to result in a trend toward federal listing or loss of viability.
Sonoran Desert tortoise (<i>Gopherus agassizii</i> [Sonoran population])	WSC	Found in the hills and rocky mountainous terrain of the Sonoran Desertscrub biotic community. Also along washes in more level terrain adjacent to hills and desert mountain ranges between 510 and 5,300 feet in elevation.	May occur. The AGFD online review tool (AZHGIS 2008) shows that the species occurs within 3 miles of the project area. The species was not detected during field reconnaissance, but habitat that supports the species is present in the project area. Additionally, this project area is located within BLM-designated Category II tortoise habitat.	May impact individuals, but is not likely to result in a trend toward federal listing or loss of viability.

*State of Arizona Status Definition

SR= Salvage Restricted. Species that are protected under Arizona Native Plant Law and that can be collected only with a permit.

WSC = Wildlife of Special Concern. Taxa that are considered species of special concern in Arizona by the AGFD.