

**Environmental Assessment**

**DOI-BLM-AZ-P030-2011-003-EA**

**Badger Springs Well and Fence  
Cordes Allotment Number: 06005**

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## Introduction

The Agua Fria National Monument is located approximately 40 miles north of the Phoenix Metropolitan area, bordered on the south by Black Canyon City and the north by Cordes Lakes. The Agua Fria National Monument is host to a wide variety of recreational uses which include motorized recreation, hiking, biking, equestrian use, camping, hunting, and sightseeing. Historic and modern uses have been dominated by homesteading, ranching, and mining. The Bureau of Land Management (BLM) administers 11 grazing authorizations on 10 allotments within the Agua Fria National Monument.

The most popular and frequently visited recreation area of the Monument is Badger Springs Wash Trail. The recreation area is also located within the Cordes allotment. Two separate livestock operators are authorized to make grazing use of the allotment. One of the grazing leases is for a traditional cattle operation and the other is a seasonal sheep operation.

See Map A for an overview map of the Agua Fria National Monument.

This environmental assessment (EA) explores alternatives for fencing a portion of Badger Springs Recreation Area from livestock grazing and removing or relocating existing livestock water in the immediate area in order to implement management decisions made in the *Agua Fria National Monument Record of Decision Approved and Resource management Plan* (2010).

## Background

The Agua Fria National Monument was established by Presidential proclamation on January 11, 2000, to preserve and protect its significant archaeological and biological resources. These “objects of scientific and historic interests” for which the Monument was created, are defined in the proclamation as the area’s prehistoric and historical archaeological sites; its expansive semi-desert grassland and riparian forests; its vegetative diversity and availability of water; and the productive habitats for diverse and abundant wildlife species.

Following years of public involvement and planning, The Agua Fria National Monument Record of Decision (ROD) and Approved Resource Management Plan (RMP) took effect in April, 2010. Resource Management Plans (RMPs) are prepared to resolve significant issues and management concerns associated with management of the public lands in the RMP planning area. The Approved RMP is primarily designed to resolve identified planning issues. The BLM used the public scoping process to identify issues relevant to the Agua Fria National Monument. As a result of public participation and the planning process, the management decision GM-6, “*Remove the immediate area surrounding Badger Springs Wash from the Cordes allotment to provide for developing a visitor parking area, information kiosk, campground, and infrastructure,*” was established for public lands management by the BLM in the Agua Fria National Monument.

## Purpose and Need for Action and Decision to be Made

The purpose of the proposed action is to implement a portion of management decision GM-6 of the Agua Fria National Monument ROD and Approved RMP. This includes removing the area immediately surrounding Badger Springs Wash from the Cordes allotment by fencing a portion from livestock grazing and removing or relocating the existing livestock water. The need for action stems from the aforementioned management decision, which was determined in order to manage conflicting uses between recreationists and livestock grazing in the Badger Springs Recreation area. The decisions to be made include:

- A determination of the fencing location to remove livestock access from the Badger Springs Recreation area
- A determination to remove, retain, or relocate a livestock well and/or water

While this project will set the stage for recreational development within the Badger Springs Wash area, specific decisions associated with visitor parking, informational kiosk, campground, and other infrastructure will be addressed and determined in a subsequent planning and Environmental Assessment process.

## Land Use Plan Conformance

The Agua Fria National Monument ROD and Approved RMP took effect in April, 2010. The proposed action is in conformance with the existing ROD and approved RMP. AFNM- Record of Decision and Approved Resource Management Plan (April 2010)

*GM-6. Remove the immediate area surrounding Badger Springs Wash from the Cordes allotment to provide for developing a visitor parking area, information kiosk, campground, and infrastructure.*

*GM-7. Fence construction and maintenance will follow guidance provided in BLM's Handbook on Fencing No. 1741-1.*

*GM-8. When lands are devoted to a public purpose that precludes livestock grazing, the BLM will adjust allotment boundaries to allow for that use.*

*GM-12. Range improvements needed for proper management for the grazing program will be determined and completed, including repair and/or installation of fences, cattle guards, and water developments.*

*GM-13. Vehicular access to repair range improvements by the grazing permittee or lessee is considered administrative access. Use of vehicle routes closed to public use, but limited to administrative uses, will be allowed to maintain or repair range improvements.*

*GM-14. One-time travel off designated routes to access or retrieve sick or injured livestock would be authorized as an administrative use for transporting the animal to obtain medical help.*

*GM-15. Management practices to achieve Desired Plant Communities (DPCs) will consider protecting and conserving known cultural resources, including historical sites, prehistoric sites, and plant of significance to Native American people.*

*GM-16. Apply management actions outlined in the Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (Land Health Standards) to recognize and correct potential erosion problems that could degrade other resources, with prioritized emphasis on sites that might directly affect species that have been listed as threatened, endangered, or candidate by the U.S. Fish and Wildlife Service (USFWS).*

*GM-20. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with these functions.*

*WF-15. Water developments, including those for purposes other than wildlife, will include design features to ensure safe and continued access to water by wildlife.*

*WS-8. Developed springs, seeps, and other projects affecting water and related resources will be designed to protect ecological functions and processes and to continue to provide habitat at the source for endemic invertebrates, native fishes, and other native aquatic species that may be present.*

*CL-13. In evaluating project designs and proposed activities, seek to avoid disturbing or removing Native American human remain and associated items, Avoid directing site visitors towards areas where these items could be observed or disturbed.*

The proposed action would not impose any constraints on other actions or activities otherwise authorized in the Agua Fria National Monument ROD/RMP.

## **Scoping & Public Involvement**

The proposed livestock water and fencing project has been developed with considerable public input from individuals, special interest groups, affected livestock lessees, interested community landowners, other interested public individuals, and BLM resource specialists.

Coordination with the affected livestock lessees began early in 2009. BLM initiated formal consultation, cooperation, and coordination with the affected lessees in January 2011. Three meetings and two field trips have occurred between January and September 2011.

Formal public scoping for these projects was initiated in June 2011. Notification letters were distributed on June 8, 2011 to more than 400 individuals and organizations who have expressed interest in Monument management activities and planning processes. The letters included the purpose and need for action, a summary of the proposed projects, and solicitation for feedback on 1) project designs, 2) potential impact to resources, 3) alternatives development, and 4) additional information/data needs for conducting the analysis. Feedback regarding the proposed action was received in writing and the public scoping period was completed in July 2011. The scoping period and public involvement process for this project conforms to requirements of the National Environmental Policy Act (NEPA) and the *BLM National Environmental Policy Handbook*, H-1790-1.

Scoping Comments are classified as either substantive or non-substantive. Substantive comments provide input that would affect the NEPA process, impacts analysis, or the range of alternatives analyzed in the EA. Non-substantive comments express opinions, emotions, or provide input or request alternatives/analysis that are outside the scope of the EA. A summary of substantive comments is summarized in Table 1 Substantive Scoping Comments.

Through the scoping process, public comments were received from:

- General members of the public
- Lessees
- Phoenix Zoo/Arizona Zoological Society
- Arizona Game and Fish Department
- Upper Agua Fria Watershed Partnership
- Prescott Open Trails Association
- City of Phoenix
- Arizona Off-Highway Vehicle Coalition

## Issues

Scoping issues and concerns helped to drive the project designs, alternatives, and potential resource impacts presented throughout this document. The following table lists issues/questions that were identified during the scoping process, along with the section of the EA in which the issues are addressed:

**Table 1 Substantive Scoping Comments**

Issue/Question	Addressed in:
<b><i>Recreation Impacts</i></b>	
Continued recreational (motorized) access to Badger Springs Wash area should be maintained, while also achieving the goals for livestock management. Implementation of the livestock control fence be made so as to also provide for continued multiple use recreational (motorized) access in Badger Springs Wash	Alternatives Development
Educating the public on how to recreate responsibly without deteriorating the land is of great importance. In briefly surveying the area from the Badger Springs Kiosk to the trailhead I could see the extensive labyrinth of roads and trails made by vehicles, OHVs and others that will continue to contribute non-point source pollution in the form of eroded sediment to the riparian area. Priority should be placed on restoration of this area.	Out of Scope – To be addressed in a separate recreation plan for the area.
Continued OHV use in the Badger Springs Wash Area	Out of Scope – Address in future planning
Design livestock controls to ensure continued multiple use recreation access	Alternatives Development
Law Enforcement – concern about illegal dumping and vandalism in area	Alternatives Development and Impact Analysis
<b><i>Livestock Impacts</i></b>	
Impacts to sheep herders—concern about the sufficiency of water from the BLM proposed new well.	Alternatives Development and Impact Analysis
When the sheep come through where do they water?	Affected Environment and Impacts Analysis
<b><i>Process Issues</i></b>	
Map is confusing	Process and Administrative improvement (The BLM subsequently created an updated and clearer project map for distribution to lessees)
Conduct monitoring to illustrate how human/domestic/wildlife utilize the region	Out of Scope – To be addressed in a separate monitoring plan for the area.
Apply adaptive management strategies if carrying capacities are altered	Alternatives Development
<b><i>Livestock Water Development Impacts</i></b>	
Concern that electrically-powered pump could be vandalized.	Alternatives Development
Proposal to run the new fence just north of the main road, which would allow the current well to be used and would prohibit the destruction that is occurring from all the off-road vehicles. A fence north of the road would not impact any of the visitors. All the ruins and points of interest are south of there along with the parking area and bathrooms. It would also allow ample	Alternatives Development



Issue/Question	Addressed in:
room for camping.	
If the existing well is a good source why not just pipe it across the proposed fence?	Alternatives Development
An analysis of use of the current well versus the costs of drilling a new well as proposed should be pursued.	Alternatives Development
Use existing well	Alternatives Development
What is the adequacy of proposed well for sufficient water supply?	Impacts Analysis
Cost of new well -- suspect that it is quite costly. If the changes are merely fencing, that could be quite a cost saving.	Alternatives Development and Impact Analysis
Fencing, do the following: turn north through the wash, which at this point is quite narrow, then turn northwest on high ground relatively close adjacent to the wash to road #9005. This fencing arrangement would allow access to the existing well and provide additional acreage for forage, always a necessity in this dry, high desert environment.	Alternatives Development
<b><i>Wildlife Impacts</i></b>	
Concern about impacts to wildlife habitat from livestock management and recreation development (specific concern about wildlife/riparian habitat in the upper reach of the Badger Springs Wash)	Impact Analysis
Restriction of wildlife movement as a result of fence location and/or design	Alternatives Development and Impact Analysis
Impacts to pronghorn movement; pronghorn have been shown to be particularly sensitive to fence barriers	Alternatives Development and Impact Analysis
Restriction of wildlife access to water as a result of water development design (troughs heights/fencing)	Alternatives Development and Impact Analysis
Location of water very near interstate freeway may contribute to wildlife/vehicle collisions by attracting wildlife	Alternatives Development and Impact Analysis
Water development design without wildlife escape ramps may lead to wildlife entrapment and death	Alternatives Development and Impact Analysis
Placement of water developments in areas with high tree/shrub cover may enhance a predators ability to ambush species such as pronghorn, who rely on sight/flight to avoid predation	Alternatives Development and Impact Analysis
Use wildlife friendly standards for the fence; smooth top and bottom wire; top wire not > 42" high, 12" spacing between top and second strand; at least 16'18" spacing between bottom wire and ground for pronghorn.	Alternatives Development
Locate the fence as far north as possible and outside of the high density tree/shrub canopy that characterizes the Badger Spring draw. Moving the fence to open grassland could benefit pronghorn and deer by improving their ability to detect predators while navigating a barrier. It would also improve their ability to quickly pass under or over the barrier if escaping predators by maximizing the open space adjacent to fence lines.	Alternatives Development
Locating the well development further north and as close to Badger Spring Wash (or further east) as possible would be more conducive for wildlife use. It would move the water to a quieter location away from an interstate and the recreation area; wildlife might otherwise avoid this water due to traffic volumes and human presence.	Alternatives Development

Issue/Question	Addressed in:
It would move the water to a location that might reduce the potential for wildlife/vehicle collisions; birds, mammals (including bats), reptiles and even amphibians rely on livestock waters in arid climates. Placing these waters adjacent to interstate highways becomes an attractive nuisance for all of these taxa as they seek water. Birds and mammals may be especially vulnerable.	Alternatives Development
Design the water development so that the troughs are inset in the ground or wildlife ramps are created to facilitate access by even small mammals and reptiles. Include escape ramps in the design and use concrete or metal grating (see Bat Conservation International design) as a non-slippery surface that intersects with the sides of troughs in addition to the ramp feature.	Alternatives Development
Avoid cross fencing, wires or metal braces on troughs to minimize potential collision impacts to birds and bats, and maximize their access to water on the wing.	Alternatives Development
Avoid fencing around the water source; if fencing is required for gathering purposes, plumb a second trough (or wildlife guzzler/catchment type design) to outside of the fencing for the benefit of wildlife.	Alternatives Development
<b><i>Fire Management Impacts</i></b>	
Concern about fire danger south of road	Impact Analysis
Increased fire danger from reduced grazing	Impacts Analysis

## Alternatives

Five alternatives are considered in this environmental assessment (see Map B), including the no action alternative.

1. **No Action:** The No Action alternative represents the current management situation in the project area.
2. **Proposed Action:** Placement of fencing at a mid-range location for livestock control; relocation of the livestock water, drilling a new well, and development of water storage and a drinking system.
3. **Alternative 3:** Placement of fencing at a southern location for livestock control; utilization of the existing livestock well and installation of water storage and a drinking trough.
4. **Alternative 4:** Placement of fencing at a northern location for livestock control; removal of livestock water from the southern end of the pasture.
5. **Alternative 5:** Placement of fencing at a mid-range location for livestock control (same as the proposed action); utilization of the existing well, relocation of the livestock water by piping water north to a newly developed water storage and drinking system.

Table 2 Summary of Alternatives

	No Action	Proposed Action	Alternative 3	Alternative 4	Alternative 5
<b>Fencing to separate livestock from recreation Area?</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Acres of Cordes allotment excluded to grazing	0	240	130	620	240
Water Source (well) for livestock water?	<b>Yes</b> existing well	<b>Yes</b> new well	<b>Yes</b> existing well,	<b>No</b> close existing well	<b>Yes</b> existing well,
Water storage and developed drinking system at southern end of pasture?	<b>No</b> existing undeveloped ponds	<b>Yes</b> new water storage and troughs	<b>Yes</b> new water storage and trough	<b>No</b> no available water	<b>Yes</b> new water storage and troughs

## No Action

Under the No Action Alternative, no fencing would be constructed and separation of livestock from the Badger Springs Recreation Area would not occur. Additionally, there would be no relocation of the existing livestock water (see map C). Livestock would continue to graze and make use of the existing livestock water within the recreation area. This alternative is inconsistent with the AFNM- Record of Decision and Approved Resource Management Plan (April 2010), Management decision GM-6, “*Remove the immediate area surrounding Badger Springs Wash from the Cordes allotment to provide for developing a visitor parking area, information kiosk, campground, and infrastructure.*”

## Proposed Action

The proposed action consists of two main components: 1) a mid-range fencing location to separate livestock grazing from the Badger Springs Recreation Area; and 2) relocation of the livestock water in the southern end of the pasture, drilling a new well, developing water storage and a drinking system.

### Fencing

The BLM is proposing the installation of approximately 1 mile of 4-strand barbed and smooth wire fencing, to exclude livestock use of approximately 240 acres located 0.3 mile north of Badger Springs area at T. 10 N., R. 2 E., Sec. 24 (see map C). The proposed action includes installation of a cattle guard where the fence crosses an existing road east of I-17 and a water gap across Badger Springs Wash. The fence would connect to the Badger Springs Wash riparian enclosure on the east and the Arizona Department of Transportation Right-of-Way fence on the west. The fence would be designed and constructed in a manner that ensures adequate control of livestock consistent with achieving wildlife, recreation, cultural, and Monument resource

objectives. The fencing design would allow for maximum wildlife passage and unimpeded hydrological function, with minimal impacts on vegetation and soils.

The northwest corner of Badger Springs Wash riparian enclosure would be modified for the relocation of a water gap across the wash. The placement of the water gap was selected for its feasibility to withstand high water flows and accessibility for maintenance purposes. The modification would make 20 acres riparian/upland habitat and 0.25 miles of Badger Springs Wash available to livestock grazing. The enclosure would continue to exclude 280 acres of riparian/upland habitat and 0.75 miles of Badger Springs Wash, and prohibit access to the Agua Fria River from livestock use.

#### Livestock Water

An existing well used for livestock water located in the immediate area of the Badger Springs trailhead and parking area would be removed from livestock use. A proposed replacement well is located at T. 10 N., R. 2 E., Sec. 24, NW1/4 NW1/4 (see map D). The location may be accessed by a previously inventoried road, requiring no new route disturbance. In addition to drilling and casing the well, two recessed 10,000 gallon water storage tanks, buried pipeline, a small pump storage facility, and a series of livestock troughs with wildlife escape ramps would be installed. Only the minimum disturbance required to accomplish the task would be permitted. This would require small areas to be cleared (approximately 50 x 50 ft.) of vegetation for each storage tank, well site, and series of troughs. A minimal amount (less than 300 feet long by 3 feet wide) of trenching from the storage tanks and troughs is needed to bury the pipeline.

#### Mitigation Measures and Design Features

No road construction would be permitted in conjunction with the proposed action. Contractors would be required to haul equipment by pack animals where off road access is needed for fence construction. Routine maintenance would be performed on the livestock water and fencing as required by the lessees. Currently, the livestock operators provide their own water pumps, this arrangement would not change. Project construction would be carried out in 2012. See *Table 3 Standard Mitigation Measures and Design Features for All Alternatives* for standard mitigation measures and design features.

### Alternative 3

Alternative 3 consists of two main components: 1) a southern fencing location to partially separate livestock grazing from the Badger Springs Recreation Area and 2) continued utilization of undeveloped livestock water in the immediate surrounding area of Badger Springs Wash.

#### Fencing

Alternative 3 proposes the installation of approximately 1.4 miles of 4-strand barbed and smooth wire fencing, to exclude livestock use of approximately 130 acres located in the Badger Springs Recreation Area at T. 10 N., R. 2 E., Sec. 24 (see map E). The fence would parallel the north side of roads 9287 and 9003. The fence briefly crosses to the south side of road 9287 to include a livestock well. Two cattle guards would be installed where the fence crosses existing roads. A water gap would be installed across Badger Springs Wash north of where road 9287 crosses the wash. The fence would connect to the boundary fence of the Horseshoe allotment on the east, the cattleguard at Badger Springs Wash crossing, and the Arizona Department of Transportation I-17 Right-of-Way fence on the west. The fence would be designed and constructed in a manner that ensures adequate control of livestock consistent with achieving wildlife, recreation, cultural, and Monument resource objectives. The fencing design would allow for maximum wildlife passage and unimpeded hydrological function, with minimal impacts on vegetation and soils.

Under Alternative 3, a portion of Badger Springs Wash riparian enclosure would be removed, making 80 acres of riparian/upland habitat and 0.4 miles of Badger Springs Wash available to livestock grazing. The proposed new fencing would continue to exclude 220 acres of riparian/upland habitat and 0.6 miles of Badger Springs Wash, and prohibit access to the Agua Fria River from livestock use.

#### Livestock Water

An existing well used for livestock water located at T. 10 N., R. 2 E., Sec. 24, SE1/4 NW1/4 in the immediate area of the Badger Springs trailhead and parking area (see map E) would continue to be utilized by the grazing lessees. The livestock water is undeveloped. The sheep operators would continue to use a generator to pump water from an existing well into man-made ephemeral ponds. A 5,000 gallon water storage tank, buried pipeline, a small pump storage facility, and livestock trough with wildlife escape ramps would be installed for the cattle operation. Only the minimum disturbance required to accomplish the task would be permitted. This would require a small area to be cleared (approximately 100 x 100 ft.). Trenching for buried pipeline from the existing well, to the water storage tank, and trough would occur in the cleared area.

#### Mitigation Measures and Design Features

No road construction would be permitted in conjunction with the proposed project. Contractors would be required to haul equipment by pack animals where off-road access is needed for fence construction. Routine maintenance would be performed on the livestock water and fencing as required by the lessees. Location of the water gap is easily accessible and expected to withstand high water flows. Currently, the livestock operators provide their own water pumps, this arrangement would not change. Project construction would be carried out in 2012. See Table 2 for standard mitigation measures and design features.

### Alternative 4

Alternative 4 consists of two main components: 1) a northern fencing location to separate livestock grazing from the Badger Springs Recreation Area and 2) does not propose locating livestock water in the southern portion of the pasture (see map F).

#### Fencing

Alternative 4 proposes the installation of approximately 1.5 miles of 4-strand barbed and smooth wire fencing, to exclude livestock use of approximately 620 acres located 1.5 miles north of Badger Springs area at T. 10 N., R. 2 E., Sec. 13. The proposed action includes installation of a cattle guard where the fence crosses an existing road east of I-17 and a water gap across Badger Springs Wash. The fence would connect to the existing Badger Springs Wash enclosure on the east and the Arizona Department of Transportation I-17 Right-of-Way fence on the west. The fence would be designed and constructed in a manner that ensures adequate control of livestock consistent with achieving wildlife, recreation, cultural, and Monument resource objectives. The fencing design would allow for maximum wildlife passage and unimpeded hydrological function, with minimal impacts on vegetation and soils. An additional 0.5 miles of Badger Springs Wash would be removed from livestock use.

#### Livestock Water

Alternative 4 does not propose locating livestock water in the southern end of the pasture. An existing well used for livestock water located in the immediate area of the Badger Springs trailhead and parking area would be removed from livestock use. Livestock would continue to have access to the Horseshoe well located in the northern portion of the pasture.

## Mitigation Measures and Design Features

No road construction would be permitted in conjunction with the proposed project. Contractors would be required to haul equipment by pack animals where off-road access is needed for fence construction. Routine maintenance would be performed by the lessees. Location of the water gap is expected to withstand high water flows. Project construction would be carried out in 2012. See Table 2 for standard mitigation measures and design features.

## Alternative 5

Alternative 5 consists of three main components: 1) a mid-range fencing location (same as proposed action) to separate livestock grazing from the Badger Springs Recreation Area, 2) continue use of an existing well located in the immediate area of the Badger Springs trailhead and parking area as a livestock water source, and 3) relocation of a livestock water by piping water north to a newly developed water storage and drinking system (see map G).

### Fencing

Under Alternative 5, the fencing proposal is the same as the Proposed Action (see above).

### Livestock Water

An existing well located at T. 10 N., R. 2 E., Sec. 24, SE1/4 NW1/4 in the immediate area of the Badger Springs trailhead and parking area would continue to be utilized as a livestock water source. Approximately 1/3 mile of buried pipeline would be installed from the existing well site to the newly developed water storage and drinking system north of Badger Springs Wash recreation area. The new water development includes two recessed 10,000 gallon water storage tanks, buried pipeline, a small pump storage facility, and a series of livestock troughs with wildlife escape ramps. Only the minimum disturbance required to accomplish the task would be permitted. This would require small areas to be cleared (approximately 50 x 50 ft.) for each water storage tank and series of troughs, a 5 ft. x 5 ft. area cleared for a pump storage facility, approximately 1/3 mile of trenching, and temporary off road travel by heavy equipment (approximately 1/3 mile long by 20 feet wide).

## Mitigation Measures and Design Features

Temporary off road travel would be permitted in conjunction with the installation of the livestock water. Contractors would be required to haul equipment by pack animals where off road access is needed for fence construction. Routine maintenance would be performed on the livestock water and fencing as required by the lessees. Currently, the livestock operators provide their own water pumps, this arrangement would not change. Project construction would be carried out in 2012. See Table 2 for standard mitigation measures and design features.

## Standard Mitigation Measures and Design Features for All Alternatives

Table 3 *Standard Mitigation Measures and Design Features for All Alternatives* is a summary of standard mitigation measures and design features to be implemented for each alternative where appropriate.

Table 3 Standard Mitigation Measures and Design Features for All Alternatives

<b>General Resources Mitigation Efforts</b>	No new invasive weeds will be introduced to the area by construction equipment. All construction equipment will be pressure washed prior to entering the project area.
	Only the minimum disturbance required to accomplish the task would be permitted.
	Wherever possible, rather than clearing vegetation, equipment and vehicles shall use existing surfaces or previously disturbed areas.
	Existing roads shall be used for travel and equipment storage whenever possible.

	<p>Any temporarily disturbed soils will be stabilized and/or vegetated with native tree, shrub, and forb species to provide erosion and sedimentation control as necessary. Post-construction stabilization of eroding areas will be required where fencing and ground disturbance results in accelerated erosion. This may include reseeding, water bars or other treatment as necessary.</p> <p>The project work area shall be clearly flagged or similarly marked at the outer boundaries to define the limit of work activities. All construction workers shall restrict their activities and vehicles to areas that have been flagged to eliminate impacts soil and vegetation. All workers shall be instructed that their activities are restricted to flagged and cleared areas.</p> <p>Livestock water sources and/or developments shall be labeled as non-potable water.</p>
<p><b>Cultural Resource Mitigation Efforts</b></p>	<p>Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered during project activities shall be immediately reported to the authorized officer. The BLM shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery shall be made by the authorized officer to determine the appropriate actions to prevent the loss of significant cultural or scientific values. The BLM shall be responsible for the cost of the evaluation and any decision as to the proper mitigation measures would be made by the authorized officer.</p> <p>A cultural resources monitor will be on site to monitor identified (flagged) cultural resource areas during construction of the barrier. The monitor could be a paraarchaeologist or cultural resources specialist.</p> <p>Should any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (NAGPRA) (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) be identified during the course of the project, all project related activities will instantly cease in the immediate vicinity of the discovery. Project activities within the immediate area of the discovery will only resume when the authorized officer issues a written authorization to proceed.</p> <p>If cultural (archaeological) monitoring is to be conducted the monitoring will be conducted by an archaeologist who meets the Secretary of the Interior standards.</p>
<p><b>Wildlife Resource Mitigation Efforts</b></p>	<p>Use wildlife friendly standards for the fence; smooth top and bottom wire; top wire not &gt; 42" high, 12" spacing between top and second strand; at least 16'18" spacing between bottom wire and ground for pronghorn.</p> <p>Livestock troughs with wildlife escape ramps would be installed to facilitate access by small mammals and reptiles. Use concrete or metal grating (see Bat Conservation International design) as a non-slippery surface that intersects with the sides of troughs in addition to the ramp feature.</p> <p>The breeding season of migratory birds in the area is generally between late February and early August. To prevent undue harm or habitat alteration to migratory birds, projects or portions of projects should be scheduled outside bird breeding season. If construction activities associated with the project occur during the migratory bird breeding season, a qualified biologist must survey the area for nests prior to commencement of construction activities. This shall include burrowing and ground nesting species in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, an appropriately-sized buffer area must be avoided until the young birds fledge.</p>



## Alternatives Considered but Removed from Detailed Analysis

Several alternative methods were considered during the project design phase. Different fence and livestock water locations were considered along with varying levels of water development. During the scoping process one suggested alternative was considered but removed from detailed analysis. This alternative and justification for its removal from further analysis follows:

*Continued recreational (motorized) access to Badger Springs Wash area should be maintained, while also achieving the goals for livestock management. Implementation of the livestock control fence should be made so as to also provide for continued multiple use recreational (motorized) access in Badger Springs Wash.*

The suggested alternative conflicts with the AFNM- Record of Decision and Approved Resource Management Plan (April 2010), the AFNM-Travel Management Plan (April 2010), and the Agua Fria National Monument Proclamation (January 2000). Since this alternative does not conform to implicit or explicit decisions made in the aforementioned documents, it was removed from detailed analysis

## Affected Environment and Environmental Consequences

These resources were considered and found to be unaffected by the alternatives, and are therefore not analyzed further in the assessment: Air Quality, Areas of Critical Environmental Concern, BLM Natural Areas, Greenhouse Gas Emissions, Minerals, Energy Resources, Hazardous and Solid Wastes, Native American Religious Concerns, Prime or Unique Farmlands, Flood Plains, Threatened, Endangered or Candidate Species, Migratory Birds, Rangeland Health Standards, Wilderness, Wild and Scenic Rivers, Wild Horses and Burros, Water Resources, Travel Management, Land/Access, Paleontology, and Environmental Justice Issues.

The scoping process identified the following resources or resource uses as having the potential for being impacted by the project proposal:

- Monument Objects
- Livestock Grazing
- Vegetation
- Noxious Weeds/Non Native Invasive Species
- Soil resources
- Cultural resources
- Fish, Wildlife and Special Status Species
- Riparian Zones
- Recreation
- Visual Resources
- Fire Management
- Public Health and Safety

Direct, indirect, and cumulative impacts on these resources or resource uses are analyzed in detail below.



## Monument Objects

### *Affected Environment*

The Agua Fria National Monument was established to preserve and protect the unique cultural and biological resources found in the area. The presidential proclamation establishing the Monument defines “objects of scientific and historic interest” as the area’s prehistoric and historical archaeological sites; its expansive semi-desert grassland and riparian forests; its vegetative diversity; and the productive habitats for diverse and abundant wildlife species. It states that “the Secretary of the Interior shall manage the Monument through the Bureau of Land Management, pursuant to applicable legal authorities, to implement the purposes of this proclamation,” which are the “proper care and management of the objects to be protected.”

### *Environmental Consequences*

#### *All Alternatives*

The environmental consequences of each alternative to Monument objects will be addressed in subsequent portions of this EA. Monument objects, although not specifically mentioned, will be addressed in the environmental consequence portion of each resource that may potentially be affected. Monument objects that specifically relate to resources that have been determined to be unaffected by any proposed alternatives are not discussed in subsequent portions of this EA. *Table 4 Monument Object / Resource Crosswalk* Presents a “crosswalk” between monument objects and the overarching resource area in which impacts to those objects will be addressed in the EA.

**Table 4 Monument Object / Resource Crosswalk**

<b>Monument Object, per AFNM Proclamation</b>	<b>Resource Area Addressing Object(s)</b>
Prehistoric and historic archaeological sites	Cultural Resources
Semi-desert grassland and riparian forests	Riparian Zones
Productive habitats for diverse and abundant wildlife	Fish, wildlife, and special status species

## Livestock Grazing

### *Affected Environment*

The Cordes Allotment is administered by the Phoenix District of the Bureau of Land Management (BLM). It is located east of the Bradshaw Ranger District, Prescott National Forest, and southwest of Cordes Junction. The allotment straddles Interstate 17 for approximately 3 miles between the Bloody Basin Road interchange and the Badger Springs interchange. A portion of the allotment east of Interstate 17 is located in the Agua Fria National Monument. Historically, the Cordes allotment was part of a stock driveway and subjected to many years of intense livestock use on both the upland and riparian areas.

The allotment consists of 12,451 acres (98.7%) BLM-administered public lands and 158 acres of private land. The Badger Springs Recreation Area is located in the Badger Pasture which is approximately 3,090 acres. Two separate livestock operations are authorized to make grazing use of the Cordes allotment. One is a cattle operation and is authorized 936 Animal Unit Months (AUMs) annually. The second is a sheep operation and is authorized 731 AUMs from 4/01 – 5/15 annually. Below is a description of each livestock operation and grazing system. The grazing schedules of the two livestock operations have different seasons of use.

**Cattle Operation**

Traditionally, the cattle grazing system generally consisted of moving cattle seasonally from the west side of Interstate 17 to the east side. The cattle were kept on the east side of the interstate for approximately a 6 month season of use, from November 1 to May 1 annually. In 2000 a riparian enclosure was installed along the southern portion of Badger Springs Wash to exclude livestock from the riparian area. Due to winter rain events and heavy water flows the riparian enclosure has been non-functional. A portion of the enclosure washed out in the early 2000s and as a result cattle have not utilized the pasture since. The grazing lessee intends to use the Badger pasture as part of the grazing system beginning in 2012. Below is the approved pasture rotation.

**Table 5 Grazing Rotation**

Year	Pasture	Livestock Numbers	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1	Home*	74	Black	Black	Black	Black	Black	Black	White	White	White	White	White	White
1	Home*	32	White	White	White	White	White	White	Black	Black	Black	Black	Black	Black
1	Badger**	42	White	White	White	White	White	White	Black	Black	Black	Black	Black	Black
2	Home*	74	White	White	White	Black	Black	Black	Black	Black	Black	White	White	White
2	Home*	32	Black	Black	Black	White	White	White	White	White	White	Black	Black	Black
2	Badger**	42	Black	Black	Black	White	White	White	White	White	White	Black	Black	Black
3	Home*	74	White	White	White	Black	Black	Black	Black	Black	Black	White	White	White
3	Home*	32	Black	Black	Black	White	White	White	White	White	White	Black	Black	Black
3	Badger**	42	Black	Black	Black	White	White	White	White	White	White	Black	Black	Black

**Black:** grazing **White:** no grazing

**\*Home pasture - west of I17 in Hassayampa Field Area**

**\*\*Badger pasture - east of I17 in the Agua Fria National Monument**

**Sheep Operation**

The grazing system generally consists of transporting sheep into the Badger Springs Recreation Area by truck during the spring and herding them in the local area for several weeks. Typically, bands of approximately 500-1000 sheep are brought into the area over a two week period and are trailed out to the west of Interstate 17 and north to the Prescott National Forest. Below is a typical example of annual sheep grazing use in the Cordes allotment.

**Table 6 Grazing Rotation**

Pasture	Livestock Numbers	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Badger**	475	Black	Black	Black	4/19	5/11	Black	Black	Black	Black	Black	Black	Black
Badger**	1135	Black	Black	Black	5/08	5/11	Black	Black	Black	Black	Black	Black	Black
Badger**	420	Black	Black	Black	5/10	5/11	Black	Black	Black	Black	Black	Black	Black
Home*	2,030	Black	Black	Black	5/11	5/13	Black	Black	Black	Black	Black	Black	Black

**Black:** no grazing **White:** grazing

**\*Home pasture - west of I17 in Hassayampa Field Area**

**\*\*Badger pasture - east of I17 in the Agua Fria National Monument**

### ***Livestock Water Availability***

There are currently three livestock waters in the Badger pasture: Badger Springs Well, Horseshoe Well, and Van Tank (see map H). Provided below is a location, description and condition assessment for each water source.

1. Badger Springs Well: T. 10 N., R. 2 E., Section 24 SW SW NE  
Drilled well, no water storage or troughs  
Total Water (1990) 10 gal. per minute (GPM)  
Water quality: Arsenic level range 0.58 to 0.61 mg/L (2011)
  
2. Horseshoe Well or #2: T. 10 N., R. 2 E., Section 2 SW SE NE  
Drilled well, no water storage or troughs  
Water quality: unknown
  
3. Van Tank: T. 10 N., R. 2 E., Section 13 NW NW SW  
Small stock pond, overgrown

### ***Environmental Consequences***

#### **No Action Alternative**

Under the No Action Alternative there would be no impacts or change to grazing management from current conditions. Livestock will continue to graze in the Badger Springs Recreation Area.

#### **Proposed Action**

##### ***Fencing***

Under the Proposed Action, livestock grazing would be removed from the Badger Springs Recreation Area and approximately 240 acres would be removed from the allotment. The Badger Pasture would be reduced from 3,090 acres to 2,850 acres. This reduction represents 2% of the total available acreage of the Cordes Allotment and a 8% reduction of the Badger Pasture. The majority of the land proposed for removal from the allotment is highly disturbed from past Interstate construction activities, historical grazing practices, and recreational activities. As a result, the forage productivity is low and the plant community is dominated by non-native invasive species and annual grasses.

The northwest corner of the Badger Springs Wash riparian enclosure would be modified for the relocation of a water gap across the wash. The placement of the water gap would be near the existing vehicle barrier across Badger Springs wash, and would allow for easy access and maintenance by the lessees. The redesign of the Badger Springs Wash riparian enclosure would accommodate seasonal high water flows within the wash, this would prevent the fence from being washed out during winter and monsoon rains.

### ***Livestock Water***

The Badger Springs well located in the immediate area of the Badger Springs trailhead and parking area would be removed from livestock use. A proposed replacement well and livestock drinking system would be located in T. 10 N., R. 2 E., Sec. 24, NW1/4 NW1/4. The new livestock water would include two recessed 10,000 gallon water storage tanks, buried pipeline, a small pump storage facility, and a series of livestock troughs with wildlife escape ramps would be installed. The new drinking system is designed to support 2,500 ewes with lambs per day or 42 cow/calf pair per day. It is unknown what the water sufficiency or gallons per minute of the proposed well would be. The livestock drinking system is designed with two separate water tanks (10,000 gallons) to provide sufficient water storage if needed.

Livestock distribution would be slightly altered by relocating the livestock water. The location is approximately 0.5 miles northwest of Badger Springs well. The change of livestock distribution would not impact the livestock grazing system or rangeland health standards.

### **Alternative 3**

#### ***Fencing***

Under Alternative 3, livestock grazing would be removed from a portion of the Badger Springs Recreation Area and approximately 130 acres would be removed from the allotment. The Badger Pasture would be reduced from 3,090 acres to 2,960 acres. This reduction is 1% of the total available acreage of the Cordes Allotment and a 4% reduction of Badger Pasture. The majority of the land proposed for removal from the allotment is highly disturbed from past construction activities, historical grazing practices, and recreational activities. As a result, the forage productively is low and the plant community is dominated by non-native invasive species and annual grasses.

A portion of Badger Springs Wash riparian enclosure would be removed and modified for the relocation of a water gap across the wash. The placement of the water gap will allow for easy access and maintenance by the lessees. The redesign of the Badger Springs Wash riparian enclosure should accommodate seasonal high water flows within the wash, this would prevent the fence from being washed out during winter and monsoon rains.

#### ***Livestock Water***

The Badger well located at T. 10 N., R. 2 E., Sec. 24, SE1/4 NW1/4 within the Badger Springs Recreation Area would continue to be utilized by the lessees. The livestock water is undeveloped. The sheep operators would continue to use a portable water pump from the existing well into man-made ephemeral ponds. A 5,000 gallon water storage tank, buried pipeline, a small pump storage facility, and livestock trough with wildlife escape ramps would be installed for the cattle operation. The new drinking system is designed to support 42 cow/calf pair per day. The Badger Springs well can produce up to 10 gallons per minute. The new livestock drinking system is designed with one water tank to provide sufficient water storage if needed.

Livestock distribution would not be altered. Impacts to the livestock grazing system or rangeland health standards would not occur.

### **Alternative 4**

#### ***Fencing***

Under the Alternative 4 livestock grazing would be removed from the Badger Springs Recreation Area and approximately 620 acres would be removed from the allotment. The Badger Pasture would be reduced from 3,090 acres to 2,470 acres. This reduction is 5% of the total available acreage of the Cordes Allotment and a 20% reduction of Badger Pasture. A portion of the land proposed for removal from the allotment is highly

disturbed from past Interstate construction activities, historical grazing practices, and recreational activities. As a result, the forage productively is lower in the recreation area and includes plant communities dominated by non-native invasive species and annual grasses.

#### *Livestock Water*

Under Alternative 4, an existing well (Badger well) located in the immediate area of the Badger Springs trailhead and parking area would be removed from livestock use. Livestock water would not be relocated in the southern end of Badger Pasture. Livestock would continue to have access to the Horseshoe well (also known as Well #2), located in the northern portion of the pasture (T. 10 N., R. 2 E., Section 2 SW SE NE). This action would likely impact livestock distribution in the pasture more than any other alternative. Livestock utilization would be reduced in the southern end of pasture and increased in the northern end. However, with the reduction of acreage available to livestock, water would not be needed in the southern portion of the pasture for even distribution.

### **Alternative 5**

#### *Fencing*

Impacts would be the same to those described in the proposed action.

#### *Livestock Water*

The Badger Springs well located in the immediate area of the Badger Springs trailhead and parking area would not be removed from livestock use. Alternative 5 proposes to continue using Badger Springs well as a water source and piping water to a relocated livestock drinking system in T. 10 N., R. 2 E., Sec. 24, SE1/4 NW1/4. The new livestock water would include two recessed 10,000 gallon water storage tanks, buried pipeline, a small pump storage facility, and a series of livestock troughs with wildlife escape ramps would be installed. The new drinking system is designed to support 2,500 ewes with lambs per day or 42 cow/calf pair per day. The Badger Springs well can produce up to 10 gallons per minute. The new livestock drinking system is designed with two separate water tanks (10,000 gallons) to provide sufficient water storage if needed.

Livestock distribution would be slightly altered by relocating the livestock water. The location is approximately 0.3 miles north of Badger Springs well. The change of livestock distribution would not impact the livestock grazing system or rangeland health standards.

### **Vegetation**

#### *Affected Environment*

The general area is Semi-desert Grassland and Interior Chaparral vegetative communities at an elevation of 3200 feet. The potential vegetation communities within the project area are based upon the soils within the project area that support the vegetation. Potential vegetation production is provided for these soils using Ecological Site Description. Each soil is assigned an ecological site, but multiple soils can fall within the same ecological site. Complex soils can contain different ecological sites based on the soil unit components of those complexes. There are 3 distinct ecological sites within the project area. The dominant ecological sites are described below.

The Clayey Slopes 12-16" precipitation zone (R038XA108AZ): In an average rainfall year, this site is expected to produce 815 lbs. air-dry weight of vegetative material per acre. 250 to 500 lbs. of this production is expected to be native tobosa grass (*Pleuraphis mutica*). Additional species in the project area include juniper (*Juniperus sp.*), broom snakeweed (*Gutierrezia sarothrae*), fairy duster (*Calliandra eriophylla*) and various other desert shrubs, cacti and forbs.

The Granitic Hills 12-16" precipitation zone ecological site (R038XA104AZ): In an average rainfall year, this site is expected to produce 720 lbs. air-dry weight of vegetative material per acre. The most common plant species on the site are sideoats grama (*Bouteloua curtipendula*), black grama (*Bouteloua eriopoda*), jojoba (*Simmondsia chinensis*), and shrubby buckwheat (*Eriogonum wrightii*). Additional species that occur on the site include palo verde (*Parkinsonia sp.*), and various other shrubs, cacti and forbs.

The Loamy Bottom 10-12" precipitation zone ecological site (R040XC340AZ): In an average rainfall year, this site is expected to produce 900 lbs. air-dry weight of vegetative material per acre. The most common plant species on the site are threeawn (*Aristida sp.*), perennial globemallow (*Sphaeralcea sp.*), and mesquite (*Prosopis sp.*). Portions of this plant community are dominated by salt cedar and invasive annual grasses from historical Interstate construction and other projects, livestock grazing, and off-road driving.

Riparian obligate vegetation occurs along Badger Springs Wash; associated plant species present along the drainage area include cottonwood, willow, Deer grass, bulrush, and seep willow.

### ***Environmental Consequences***

#### **No Action Alternative**

Under the No Action Alternative there would be no increase of impacts on vegetation from current grazing management.

#### **Proposed Action**

##### ***Fencing***

Vegetative clearing along approximately 1 mile of fence-line would be minimal. Only large woody vegetation impeding construction of the fence would be removed and a small amount of trampling of herbaceous plants from construction would occur. Approximately 240 acres of vegetation will be removed from livestock grazing. This will result in a reduction of utilization of palatable plant species and may increase perennial and annual plant cover. Impacts to vegetation from livestock grazing in the Badger Springs Recreation Area would be eliminated.

The Alternative proposes modifying a portion of Badger Springs Wash riparian enclosure making available 20 acres of riparian and upland vegetation to livestock grazing. This would result in increased localized grazing on desirable perennial plants and some reduction of plant cover during scheduled grazing.

##### ***Livestock Water***

Vegetative clearing would occur at the locations of two water storage tanks, well site, and troughs (approximately 50 x 50 feet). A small area (5 x 5 feet) would be cleared of vegetation to house a storage pump. Vegetation may be removed for approximately 300 feet long by 3 feet wide of trenching to install buried pipeline from the new well to the storage tanks and troughs. Heavy equipment is restricted to existing roads. Damage to vegetation beyond the areas identified to be cleared is not expected. Relocating the livestock water would result in utilization of palatable plant species and some seasonal reduction of perennial and annual plant cover of the immediate area surrounding the new location. The close proximity of the fence and livestock water can result in an apparent contrast of vegetation along the fenceline.

#### **Alternative 3**

##### ***Fencing***

Vegetative clearing along approximately 1.4 miles of fence-line would be minimal. Only large woody vegetation impeding construction of the fence would be removed and a small amount of trampling of herbaceous plants

from construction would occur. Approximately 130 acres of vegetation will be removed from livestock grazing. This will result in a reduction of utilization of palatable plant species and may increase of perennial and annual plant cover.

Alternative three proposes removing a portion of Badger Springs Wash riparian enclosure making available 80 acres of riparian and upland vegetation to livestock grazing. This will result in an increased utilization of palatable perennial species and some seasonal reduction of perennial plant cover.

#### *Livestock Water*

Vegetative clearing would be minimal as the only clearing would occur (approximately 100 x 100 feet) on previously disturbed ground adjacent to the existing well location. This will result in utilization of palatable plant species and some seasonal reduction of perennial plant cover of the immediate area surrounding the livestock water. The close proximity of the fence and water would result in an apparent contrast of vegetation along the fenceline.

### **Alternative 4**

#### *Fencing*

Vegetative clearing along approximately 1.5 miles of fence-line would be minimal. Only large woody vegetation impeding construction of the fence would be removed and a small amount of trampling of herbaceous plants from construction would occur. Approximately 620 acres of upland and riparian vegetation will be removed from livestock grazing. This will result in a significant reduction of utilization of palatable plant species and an increase of perennial and annual plant cover. Impacts to vegetation in the Badger Springs Recreation Area would be eliminated.

#### *Livestock Water*

Alternative 4 removes livestock water from use in the southern portion of the Badger pasture. This would eliminate impacts on vegetation from livestock grazing in the area surrounding the Badger Springs well. This would result in a large reduction of utilization of palatable plant species and an increase of perennial and annual plant cover in the southern portion of the pasture. Utilization of vegetation in the northern portion of the pasture near Bloody Basin Road will increase.

### **Alternative 5**

#### *Fencing*

Impacts would be the same to those described in the proposed action.

#### *Livestock Water*

Vegetative clearing would occur at the locations of two water storage tanks and series of troughs (approximately 50 x 50 feet). A small area (5 x 5 feet) near the Badger Springs Well will be cleared of vegetation to house a storage pump. Vegetation may be removed from an area approximately 1/3 mile long by 3 feet wide, via trenching to install buried pipeline from the existing well to the storage tanks and troughs. Installation of the water storage tanks, troughs, and buried pipeline would require off road travel by heavy equipment. Damage to vegetation may occur during construction and off road travel but will be limited to a 1/3 mile by 20 foot wide area. Relocating the livestock water will result in utilization of palatable plant species and some seasonal reduction of perennial and annual plant cover of the immediate area surrounding the new location. The close proximity of the fence and livestock water can result in an apparent contrast of vegetation along the fenceline.

## Noxious Weeds/Invasive Non Native Species

### *Affected Environment*

The Federal Noxious Weed Act, Public Law 93-629 (7 U.S.C. 2801 et seq.; 88 Stat. 2148), enacted January 3, 1975, established a Federal program to control the spread of noxious weeds. Executive Order 13112 issued February 3, 1999 further defines the responsibilities of Federal Agencies to prevent the introduction of invasive species and provide for their control by minimizing the economic, ecological and human health impacts that invasive species cause. Invasive species, also referred to as weeds can generally be defined as “alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Executive Order 13112). There are 10 documented invasive plant species occurring in the Badger Springs Recreation Area (Table 7 Weed Species, Badger Springs Recreation Area). The dominant weed species are Tamarisk, Red brome, Wild oat, and Bermuda grass. Historically, the area was part of a stock driveway and subjected to many years of intense livestock use on both the upland and riparian areas. In addition, a portion of the area was a borrow pit used for the construction of Interstate 17 and other purposes. Due to past uses, the immediate area of Badger Springs Recreation area has a high level of non-native and invasive species occurrences.

Table 7 Weed Species, Badger Springs Recreation Area

Common Name	Scientific Name
Wild oat	<i>Avena fatua</i>
Ripgut brome	<i>Bromus diandrus</i>
Japanese brome	<i>Bromus japonicus</i>
Red brome	<i>Bromus rubens</i>
Malta starthistle	<i>Centaurea melitenensis</i>
Bermuda grass	<i>Centaurea melitenensis</i>
Redstem stork's bill or Fillaree	<i>Erodium cicutarium</i>
Mouse barley	<i>Hordeum murinum</i>
Russian thistle	<i>Salsola targus</i>
Tamarisk or Salt Cedar	<i>Tamarix</i> spp; <i>T. chinensis</i> ; <i>T. parviflora</i> ; <i>T. ramosissima</i> & hybrids.

### *Environmental Consequences*

#### **No Action Alternative**

Under the No Action Alternative ground disturbing activities would not be occur and construction equipment and workers would not be present. The condition of noxious weeds and invasive non-native species in the project area would continue at its present state.

#### **Proposed Action**

##### *Fencing*

During ground disturbing activities of approximately 1 mile, seeds of invasive or noxious weeds could be brought into the project area and dispersed by construction equipment and workers. No off road travel is permitted for this action. Implementation of best management practices and mitigation measures listed in *Table 3 Standard Mitigation Measures and Design Features for All Alternatives* would reduce the potential for weeds to be introduced or spread within and around the project area. Therefore, impacts from weeds would be minimal.



### *Livestock Water*

During ground disturbing activities (areas of approximately 50 feet by 50 feet and trenching of approximately 300 feet long by 8 inches deep), seeds of invasive or noxious weeds could be brought into the project area and dispersed by construction equipment and workers. Heavy equipment is restricted to existing roads. Implementation of best management practices and mitigation measures listed in Table 3 Standard Mitigation Measures and Design Features for All Alternatives would reduce the potential for weeds to be introduced or spread within and around the project area. Impacts from weeds would be greater than the no action alternative due to the increase of ground disturbing activities.

### **Alternative 3**

#### *Fencing*

Impacts would be similar to those described in the proposed action.

### *Livestock Water*

During ground disturbing activities of approximately 100 x 100 feet area and trenching within the existing disturbed area, seeds of invasive or noxious weeds could be brought into the project area and dispersed by construction equipment and workers. Heavy equipment is restricted to existing roads and disturbed areas. Implementation of best management practices and mitigation measures listed in Table 2 would reduce the potential for weeds to be introduced or spread within and around the project area. Therefore, impacts from weeds would be similar to the no action alternative.

### **Alternative 4**

#### *Fencing*

Impacts would be similar to those described in the proposed action.

### *Livestock Water*

Under Alternative 4, ground disturbing activities would not occur and construction equipment and workers would not be present. The condition of noxious weeds and invasive non-native species in the project area would continue at its present state.

### **Alternative 5**

#### *Fencing*

Impacts would be the same as the proposed action.

### *Livestock Water*

During ground disturbing activities of four areas (approximately 50 x 50 feet), a small area (5 x 5 feet), and trenching of approximately 300 feet long and 8 inches deep, seeds of invasive or noxious weeds could be brought into the project area and dispersed by construction equipment and workers. Installation of the water storage tanks, troughs, and buried pipeline would require off-road travel by heavy equipment. Soil disturbance may occur during construction and off road travel but will be limited to a 1/3 mile by 20 foot wide area. Implementation of best management practices and mitigation measures listed in Table 2 would reduce the potential for weeds to be introduced or spread within and around the project area. Therefore, impacts from weeds would be greatest in alternative 5.

## Soil Resources

### *Affected Environment*

The soils in this project area fall into two general soil units. The uplands and bottom lands in the west and central part of the project area are part of the Continental-Whitlock-Cave association, while the hills on the east side of the project area fall into the Barkerville-Moano association. The western lowlands and wash, as well as the borrow pit, are comprised of Gila soils. These are deep soils on flat to gently-sloping surfaces with low erosion potential. The eastern and central uplands are comprised of Lonti-Abra complex soils. The Lonti soil tends to occupy hillslopes while the Abra soils tend to occur on hilltops and ridgelines. These moderately deep to deep soils have a moderate potential for erosion due to their landform. The hills on the east side of the project area are Barkerville cobbly sandy loams. This very shallow to shallow soil has a high erosion potential due to its landform.

### *Environmental Consequences*

#### **No Action Alternative**

Under the No Action Alternative, soils would continue to be compacted in the area currently used for livestock watering. Soil nutrients in the ponding areas would continue to be leached out, reducing soil productivity in this area. No new impacts to soils would be expected to occur.

#### **Proposed Action**

##### *Fencing*

Under the Proposed Action, effects on soils are expected to be minimal. Construction of a new fenceline would lead to localized impacts with the placement of t-posts. Total area of this disturbance is expected to be less than 100 square feet.

##### *Livestock Water*

Construction of a new water source may cause soil compaction due to drilling machinery. Construction of water holding facilities may cause localized soil compaction. Slight soil compaction is expected to occur around the water developments due to increased livestock activity. This compaction area is expected to be less than 1 acre in size.

#### **Alternative 3**

##### *Fencing*

Under this alternative, impacts to soil from fence construction would be minimal. Construction of the fenceline would lead to localized impacts due to t-post placement of less than 100 square feet. Existing roadsides exhibit soil compaction and would not be affected by construction activities.

##### *Livestock Water*

Under this alternative, soils would be compacted in the area used as ephemeral ponds for livestock watering. Soil nutrients in the ponding areas would be leached out, reducing soil productivity in this area. Construction of water holding facilities may cause localized soil compaction. Slight soil compaction is expected to occur around the water developments due to increased livestock activity. This compaction area is expected to be less than 1 acre in size.

## **Alternative 4**

### ***Fencing***

Under this alternative, soil impacts due to fencing construction would be the same as the proposed action.

### ***Livestock Water***

Removal of the ephemeral ponds would reduce continued soil compaction and leaching of soil nutrients that currently occurs in the no action alternative.

## **Alternative 5**

### ***Fencing***

Under this alternative, effect to soils from fenceline construction would be the same as the proposed action.

### ***Livestock Water***

Development of a new watering facility north of the existing well would have the same effect on soils as listed in the proposed action. Installation of a pipeline in the wash and off-road travel for this installation is not expected to impact the soils in this area, due to their alluvial nature.

## **Cultural Resources**

### ***Affected Environment***

The BLM is required by Section 106 of the National Historic Preservation Act to establish if an action is an undertaking and to take into account potential effects to historic properties as defined by 36 CFR Part 800.16. Because this proposed project will be conducted on federal lands and with federal funds, this proposed project is considered a federal undertaking as outlined in 36 CFR Part 800.16.

A class I archaeological survey (literature search) was conducted, to provide information concerning previously identified cultural resources within the proposed project area. The results of the class I survey showed that no previously identified cultural resources are within the project area and that no previous Class III (intensive) archaeological surveys have been conducted within the project area. Based on previous surveys conducted nearby, it is likely that a Class III archaeological survey would identify cultural resources within the proposed project area. Because the proposed alternatives each have a distinct landscape footprint, with the exception of the No-Action alternative it has been determined that surveying each and every possible footprint would not be cost effective. Each proposed alternative, except the No-Action alternative has a different footprint, the procedure for cultural resources clearance would be the same for alternatives two through five.

### **Cultural Resources Protocol for All Alternatives**

#### ***Fencing and Livestock Water***

Once a decision is made, an intensive Class III archaeological survey will be conducted within the potential area of effect, which includes the project footprint, access routes, staging areas, and storage areas to identify any significant cultural resources that may be within the potential area of effect and possibly impacted, by the project.

If any significant cultural resources are identified during the Class III survey, the mitigation methodology would be one of avoidance. Avoidance would be met through flagging of sites, archaeological monitoring or redesigning of the project footprint, to avoid cultural resources. In instances when identified cultural resources are within the potential area of effect, near ground disturbing activities, but not directly affected, an archaeological monitor would be used to assure cultural resources are avoided. Archaeological monitors would also be used to monitor ground disturbing activities if the potential area of effect was near (within 250 feet) a known archaeological site. Since the mitigation methodology is one of avoidance, no cultural resources would be impacted by the proposed alternatives.

## ***Environmental Consequences***

### **No Action Alternative**

Under the No Action alternative, no Class III Intensive archaeological survey would be conducted. The current management plan would continue in effect.

### **Proposed Action**

#### ***Fencing and Livestock Water***

The cultural resources mitigation methodology for this proposed project is avoidance; as such any significant cultural resources identified during the Class III intensive survey would be avoided. Cultural resources that are identified would be avoided through relocating or rerouting the segment of the project that would impact the cultural resources. Following the mitigation methodology of avoidance would result in no cultural resources being impacted by the proposed action.

### **Alternative 3**

#### ***Fencing and Livestock Water***

Impacts would be similar as the proposed action.

### **Alternative 4**

#### ***Fencing and Livestock Water***

Impacts would be similar as the proposed action.

### **Alternative 5**

#### ***Fencing and Livestock Water***

Impacts would be similar as the proposed action.

## **Fish, Wildlife and Special Status Species**

### ***Affected Environment***

The affected environment falls within Game Management Unit (GMU) 21. The Agua Fria National Monument is home to a diverse number of wildlife habitats. Riparian areas of the Agua Fria River and its many tributaries, along with the adjacent uplands and mesas, provide habitat for a variety of different wildlife species, including javelina (*Pecari tajacu*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), mountain lion (*Puma concolor*), black bear (*Ursus americanus*) and Gambel's quail (*Callipepla gambelii*). This area also provides important breeding, foraging, wintering, and migration habitat to numerous bird species. To date, over 190 bird species have been documented within the monument boundary. Additionally, numerous small mammals, fish, reptiles, and amphibians occur in this area.

A species of management concern within the AFNM is pronghorn antelope (*Antilocapra americana*). Pronghorn populations within GMU 21 are considered isolated populations, a result of habitat fragmentation

from highway construction and natural landscape features. Populations are bounded on the west by the Interstate 17 corridor and topographic constraints to the north, south and east. Genetic exchange with nearby pronghorn herds within Yavapai and Coconino counties is unlikely, due to habitat fragmentation. Aerial survey data suggest that there may be two distinct subpopulations of pronghorn that occupy the north and south ranges. Annual pronghorn surveys have been conducted since 1959 in GMU 21. Survey counts peaked in 1987 at 294, and 200 pronghorn were observed during a fall 2007 survey. During past surveys, pronghorn have been sighted on Black Mesa. The likely corridor from Perry Mesa to Black Mesa is through the Badger Springs area. However, due to the presence of invasive plant species and fire frequency, the quality of habitat on Black Mesa is reduced.

### *Special Status Species*

The western yellow-billed cuckoo (*Coccyzus americanus*) is a candidate species for listing with the U.S. Fish and Wildlife Service. Yellow-billed cuckoos were detected along the Agua Fria River during breeding surveys conducted since 2003. Yellow-billed cuckoo surveys within the Badger Springs Wash have not been conducted due to a lack of suitable habitat.

The Northern Mexican gartersnake (*Thamnophis eques*) is a candidate species. The Mexican gartersnake is associated with permanent water sources with vegetation. The last record of a single Mexican garter snake in the Agua Fria River was over 10 years ago. The Arizona Game and Fish Department considers the species extirpated from the Agua Fria River watershed based on recent survey efforts (Brennan and Holycross 2006). Badger Springs Wash lacks permanent water throughout the year; consequently, the area does not support suitable habitat.

The Sonoran desert tortoise (*Gopherus agassizii*) is a state of Arizona Wildlife Species of Concern. Desert tortoises are herbivorous, foraging on grasses and forbs. This species occupies Arizona Upland Sonoran Desert scrub areas within the Agua Fria River canyon and the south-facing slopes between Black Mesa and Black Canyon City. Within the Cordes Allotment, approximately 500 acres have been classified as Category II desert tortoise habitat. The entire Category II desert tortoise habitat is within the existing enclosure.

The Common black-hawk (*Buteogallus anthracinus*) is a state of Arizona Wildlife Species of Concern. Suitable habitat on the allotment is found along the riparian areas. This species has been documented nesting in Lousy Canyon, within the Agua Fria National Monument. The Common black-hawk is dependent upon riparian habitat where it forages on frogs, fish, reptiles, small mammals, and insects.

The Zone-tailed hawk (*Buteo albonotatus*) is a BLM-sensitive raptor often associated with riparian areas. This species may nest along the riparian areas in the allotment. The Zone-tailed hawk is more of a generalist than the Common black-hawk, and it nests and forages in a wide range of environments.

The longfin dace (*Agosia chrysogaster*) is a BLM-sensitive species. This fish occurs in the Agua Fria River and its tributaries including Badger Springs Wash. Populations of longfin dace are dependent upon water which does not persist throughout the year. When water is present, longfin dace have been observed in Badger Springs Wash. The longfin dace inhabit shallow streams with sand and rock substrate, moderate flow, with deeper water near cover; it can tolerate high water temperatures and low oxygen levels.

The lowland leopard frog (*Rana yavapaiensis*) is a state of Arizona Wildlife Species of Concern. This species has been documented in the Agua Fria River near Badger Springs Wash.

The Badger Springs area is too xeric to support a continual presence of riparian obligate Special Status Species. No Special Status fish are present in Badger Springs Wash due to a lack of water and the affected

environment is outside of desert tortoise habitat. The breeding season of migratory birds in the area is generally between late February and early August. To prevent undue harm or habitat alteration to migratory birds, projects or portions of projects should be scheduled outside bird breeding season. If construction activities associated with the project occur during the migratory bird breeding season, a qualified biologist must survey the area for nests prior to commencement of construction activities. Environmental consequences to special status species is not analyzed further since any alternative would not affect special status species.

### *Environmental Consequences*

#### **No Action Alternative**

Under the no action alternative, no new infrastructure will be constructed within the Badger Springs Area for the purposes of livestock management. No new fencing will be placed within the Cordes allotment.

#### *Fencing*

Wildlife ingress and egress will not be altered from existing conditions.

#### *Livestock Water*

There would be no change to impacts to wildlife. The location and duration of water, make wildlife species unlikely to use water provided near the Badger Springs trailhead/parking lot due to activities associated with livestock grazing and recreation.

#### **Proposed Action**

The proposed action would have both negative and positive impacts to wildlife and other biological resources within the Badger Springs Recreation area and the remainder of the AFNM.

#### *Fencing*

The construction of approximately one mile of fence may impede the ingress and egress of wildlife. Smooth top and bottom wire of the proposed four strand fence would be more likely to allow wildlife crawling underneath or jumping over the fence. This is particularly true for pronghorn, which are known to cross below a fence rather than above, and deer, which often jump over fences. The location of the proposed fence is primarily in sparse/limited woody vegetation. This is to reduce/eliminate ambush cover for predators. The proposed fence is approximately 0.3 miles from the Badger Springs Recreation Area trail head/parking lot. The proposed fence is 0.1 miles from the Badger Springs road at its closest (near I-17). As the fence alignment traverses the landscape to the east, it becomes further separated from Badger Springs Road. Wildlife crossing the fence would be less impacted by motorized travel and activities associated with recreation. Riparian species such as native fish, birds and amphibians would be unaffected by the water gap associated with the proposed fence. Under the proposed action, 240 acres are excluded from cattle grazing within the Badger Springs Wash and associated upland habitat. This equates the opening of approximately 0.25 miles of the intermittent Badger Springs Wash. Any riparian obligate species may be impacted through trampling and loss in vegetation in this area when water is in sufficient supply to support such species.

#### *Livestock Water*

The proposed well and drinking system will have a positive and negative impact to wildlife within the Badger Springs Recreation area. The location of the proposed water system is 1/4 of a mile east of I-17. This would increase the potential to attract big game such deer within a 1/4-mile of I-17 which could increase car/animal incidents. Pronghorn generally avoid roads and are hesitant to approach large roads such as I-17. The

proximity to I-17 and moderately sloped terrain will make the water less available to pronghorn. Vegetation is sparse near the proposed water system which excludes hiding cover for predators.

### **Alternative 3**

Alternative 3 would have both negative and positive impacts to wildlife and other biological resources within the Badger Springs Recreation area as well as the larger AFNM.

#### ***Fencing***

The construction of approximately 1.4 miles of fence may impede the ingress and egress of wildlife. Smooth top and bottom wire of the proposed four strand fence would be more likely to allow wildlife crawling underneath or jumping over the fence. This is particularly true for pronghorn which are known to often cross below a fence rather than above, and deer which often jump over fences. The fence location would be immediately next to the Badger Springs road and trailhead/parking lot. The fence would be located in moderately low density to sparse vegetation. Fences in vegetated areas provide ambush sites for predators. The close proximity to a road and recreation area may amplify the barrier effect of a fence and further impede the ingress and egress of wildlife. Riparian species such as native fish, birds and amphibians would be unaffected by the water gap associated with the southern fence. Cattle would be excluded from 130 acres of Badger Springs Wash and associated uplands. However, 0.4 miles of the intermittent Badger Springs Wash would be removed from the existing enclosure. Any riparian obligate species would be impacted through trampling and loss in vegetation in this area when water is in sufficient supply to support such species.

#### ***Livestock Water***

The Alternative 3 well and drinking system would not have an effect on wildlife or special status species. The location of the water system would be directly next to the Badger Springs trailhead parking lot. Vegetation is sparse near the proposed water system which does not provide hiding cover for predators. However, predators are less likely to occur in areas with a large human presence. Wildlife species are unlikely to use water provided near the Badger Springs trailhead/parking lot due to activities associated with livestock watering and recreation. Wildlife are likely instead to use other sources further away from human activities. If water is not present in Badger Springs Wash, it is still unlikely that wildlife will use a water source near a trailhead/parking lot.

### **Alternative 4**

Alternative 4 is the furthest north of the three fence alternatives.

#### ***Fencing***

The length of the northern alternative is the longest at 1.4 miles. The northern fence is the longest barrier to wildlife ingress and egress of all the alternatives. However, Alternative 4 is located in sparse vegetation and in areas with high topographic relief. This alignment occupies areas with less vegetation than the other alternatives. The lack of hiding cover and the large distance (1 mile) from human presence may facilitate wildlife movements.

#### ***Livestock Water***

The area excluded from cattle grazing in Alternative 4 is approximately 620 acres of the Badger Springs Wash, the largest enclosure of the alternatives. This includes an approximate increase of 0.7 miles of Badger Springs Wash. Habitat for wildlife within the enclosure is likely to improve with increased seedling recovery and soil stability.

## Alternative 5

Alternative 5, the mid-range fence alignment (same as proposed action) with the retention of existing well and the development of storage facilities has both positive and negative impacts to wildlife.

### Fencing

Impacts would be the same as the proposed action alternative.

### Livestock Water

The Alternative 5 well and drinking system would have both positive and negative impacts to wildlife within the Badger Springs Recreation area. The location of water facility developments would be 0.3 miles away from the Badger Springs trailhead parking area. Additionally, the water troughs would be located 0.5 miles away from I-17. Water would be available year around for wildlife through a system of wildlife friendly troughs which are supported by recessed water tanks. This combination of distance from both the Badger Springs Recreation area and I-17, while providing water for wildlife would be the most beneficial to wildlife of all the alternatives. Wildlife and human interactions would be limited.

## Riparian Zones

### Affected Environment

Badger Springs Wash is located east of Interstate 17 in the Cordes allotment and Badger Springs Recreation Area. It is a tributary of the Agua Fria River. The Badger Springs Wash riparian zone is 2807 feet in length. Many reaches of Badger Springs Wash have no surface water at base flow. Following wet winters, the wash may flow continuously for much of the year. When surface water is available for extended periods of time, both riparian species of flora and fauna thrive. During extended dry periods, the entire wash may dry out. However, riparian obligate vegetation species persist. Dominant overstory species include Fremont cottonwood (*Populus fremontii*), Goodding's willow (*Salix gooddingii*), Velvet ash (*Fraxinus velutina*), and Salt cedar (*Tamarix ramosissima*). Understory species include seep willow (*Baccharis salicifolia*), Bermudagrass (*Cynodon dactylon*), cocklebur (*Xanthium* L.), common three square sedge (*Schoenoplectus pungens*), and rabbit brush (*Chrysothamnus viscidiflorus*).

Past impacts to the Badger Springs Wash include grazing, off-highway vehicle (OHV) damage, and drought. Functional Ratings, as determined by Proper Functioning Condition assessment (BLM Technical Reference 1737-9) (Prichard, 1998) have yielded "Functional at Risk" (FAR) ratings. At risk trends have been both "Up" and "Down" (DN). Past Riparian Area Description Record and Proper Functioning Condition (PFC) findings are summarized below.

Table 8 Proper Functioning Condition Summary

Segment	Length	Year Evaluated	Condition/Trend
6005-41A	1.00 mile	1991	Unsatisfactory
		1994	Unsatisfactory
		1995	FAR/DN
		2000	FAR/DN
		2002	FAR/UP

\*FAR-Functional At Risk

\*DN- Down

The condition assessment results of unsatisfactory and FAR/DN were attributed to livestock grazing, OHV impacts, weedy species presence, and drought. Lack of seedling recruitment and riparian obligate species



prior to 2002 survey was a significant factor in the FAR/DN rating. In an effort to improve these resource conditions, there have been many management actions implemented. Actions include both livestock and OHV management actions. A historic grazing enclosure was constructed to prevent cattle from entering the Agua Fria River via Badger Springs Wash. An additional grazing enclosure was built in 2000 which expanded the amount of riparian zone protection within the Cordes allotment. However, due to the alignment across a wide portion of the Badger Springs Wash, the fence was washed out and unable to be maintained by the lessee. OHVs continued to access and drive in Badger Springs Wash until the construction of a vehicle barrier in spring of 2011. Invasive saltcedar (*Tamarix ramosissima*) also thrives within Badger Springs Wash and the nearby former borrow pit.

Within the Agua Fria National Monument, grazing in riparian areas is limited to winter season of use. This is typically from November 1 to March 1 in riparian pastures. The most recent Rangeland Health Evaluation, Environmental Assessment, and Grazing Decision proposed making Badger Springs Pasture a winter season of use only pasture. The decision was protested and it was decided that the pasture be made year round for grazing provided an enclosure was built to exclude portions of Badger Springs Wash. In the Cordes Allotment CRMP 2010/2011/2012 the season of use is Oct – March. The winter season use of riparian areas is intended to do the following:

- Ensure recruitment and survival of cottonwood, willow, ash, and sycamore trees
- Reduce livestock loafing along creek bottoms, which degrades stream banks and alters channel morphology, thereby increasing the channel width-depth ration and creating a deeper channel with more pools;
- Allow the accumulation of vegetation in the herbaceous layer that protects the natural function of the streams.

These effects would increase the diversity and abundance of plant species and the complexity of the wildlife habitat, benefiting a number of wildlife species, including special status fish and migratory birds.

### ***Environmental Consequences***

#### **No Action Alternative**

The Badger Springs Recreation Area currently includes a 300-acre riparian enclosure, which includes 1.0 mile of Badger Springs Wash. Under the No Action Alternative no new impacts would occur to riparian resources under current conditions.

#### **Proposed Action**

The proposed action will have minor impacts to riparian resources within the Badger Springs Recreation area as well as the larger AFNM.

#### ***Fencing***

The fence would modify the existing 300-acre Badger Springs Wash riparian enclosure by making 20 acres of xeric (dry) riparian area available to livestock grazing. The proposed action would continue to exclude livestock use from 280 acres of the Badger Springs Wash riparian enclosure. This enclosure would include 0.75 of a mile of Badger Springs Wash from grazing use. Under the proposed action, 0.25 miles Badger Springs Wash made available to livestock grazing in addition to 20 acres of the wash and associated upland habitat. Riparian species such as native fish, birds and amphibians would be unaffected by the water gap associated with the proposed action fence alignment. Any riparian obligate species may be impacted through

trampling and loss in vegetation in this 20 acre when water is in sufficient supply to support such species. This fence alignment would provide moderate riparian protection but greater than Alternative 3.

#### *Livestock Water*

The proposed new well and water facilities will not affect riparian resources. Water facilities will be 0.6 miles from Badger Springs Wash. The distance of the proposed water facilities is the greatest of all alternatives. This location will help distribute livestock and associated utilization away from Badger Springs Wash.

### **Alternative 3**

Alternative 3 would have impacts to the Badger Springs Recreation area as well as the larger AFNM.

#### *Fencing*

Under Alternative 3, a portion of Badger Springs Wash riparian enclosure would be removed, making 80 acres of riparian/upland habitat and 0.4 miles of Badger Springs Wash available to livestock grazing. The proposed new fencing would continue to exclude 220 acres of riparian/upland habitat and 0.6 miles of Badger Springs Wash, and prohibit access to the Agua Fria River from livestock use. Riparian species such as native fish, birds and amphibians would be unaffected by the water gap associated with the southern fence. Any riparian obligate species would be impacted through trampling and loss in vegetation in the 80 acre area when water is in sufficient supply to support such species. This fence alignment would provide the least riparian protection of all the alternatives.

#### *Livestock Water*

Use of the existing livestock water would not have a direct effect on riparian resources. However, the close proximity of the livestock water to Badger Springs Wash would result in grazing impacts to riparian resources. The existing well and proposed facilities are 0.1 miles from the riparian area. Impacts could result from increased loafing and utilization of available portions of Badger Springs Wash. These impacts are likely to occur since livestock concentrations are greater near water sources. Due to the close proximity of the water source to the Badger Springs Riparian area, impacts would be greatest under this alternative.

### **Alternative 4**

Alternative 4 would have impacts to the Badger Springs Recreation area as well as the larger AFNM.

#### *Fencing*

Under Alternative 4, the fencing design would allow for maximum wildlife passage and unimpeded hydrological function, with minimal impacts on vegetation and soils. An additional 0.5 miles of Badger Springs Wash would be removed from livestock use. This fence alignment would be the furthest north fence alignment and would exclude 620 acres of riparian and associated upland habitat. This alternative would be the most protective of riparian habitat since it is the most restrictive to grazing of all alternatives. Riparian habitat and associated flora and fauna would have the least pressure from livestock grazing under Alternative 4.

#### *Livestock Water*

Water for livestock and wildlife would not be available in the Badger Springs Recreation outside of natural surface retainments and flows. Riparian areas would not be affected by the lack of water development.

## Alternative 5

Alternative 5, the mid-range fence alignment (same as proposed action) with the retention of existing well and the development of storage facilities would have impacts to the Badger Springs Recreation area as well as the larger AFNM.

### *Fencing*

Impacts are the same as the Proposed Action.

### *Livestock Water*

Use of the existing well, new storage tank and livestock troughs outside of the Badger Springs Recreation Area would not have a direct effect on riparian resources. However, the close proximity of the proposed facilities may result in greater impacts of livestock to riparian resources. The distance of the proposed troughs would be 0.25 miles from the riparian area. Impacts could result from increased loafing and utilization of available portions of the Badger Springs Wash. These impacts may occur due to higher livestock concentrations levels near water sources. The impacts to riparian areas from livestock may be directly related to the proximity of water sources.

## Recreation

### *Affected Environment*

Designation of the Agua Fria National Monument has increased the public interest and visitor use, often referred to as a “designation effect,” which describes the increase in interest of an area once it has been recognized through legislation or executive action as an area that is “special.”

The Badger Springs Recreation Area is the most visible and visited area of the Monument. In 2010, 22,000 people visited Badger Springs. The Recreation Area has minimal developments that consist of a maintained gravel/dirt road, vault toilets, a semi-graveled trail parking area, trail sign and sign-in trail register box. The Badger Springs Trail is an undeveloped trail that follows a natural wash to the convergence of the Agua Fria River and has been designated as an Important Bird Area by the Audubon Society. At the point of the river convergence is a prehistoric petroglyph panel and a historic mining arrastre feature. The Badger Springs Trail is an extremely popular and well published destination that is the primary purpose for a large number of visitors. The Agua Fria National Monument recreation visitor profile shows the majority of interest is in the following:

- Hiking and walking
- Natural study
- Visiting historical and cultural sites
- Dispersed camping
- Wildlife and bird watching
- Hunting

There is a strong preference for retaining the natural character of the environmental setting while developing visitor support facilities and increasing road maintenance, interpretive programs, and visitor services. Environmental concerns are litter, erosion, vandalism, livestock grazing, trash dumping, and vehicle damage to soil and plants. Recreational activity in the area is highest during the fall through spring seasons. There are no commercial recreational operations in the Badger Springs Recreation Area.

## *Environmental Consequences*

### **No Action Alternative**

The No Action Alternative would have no impact on the current visitor recreational experience. User conflict between recreationists and livestock would continue to exist.

### **Proposed Action**

The proposed action would separate livestock grazing from the Badger Spring Recreation Area. The allotment fence line would be built about ¼ mile north of the recreation use area. The well, troughs, and tank would be located about ½-mile from the existing well in a low lying area north of the Badger Springs Recreation Area, north of the fence line. The proposed alternative would provide for future recreation developments such as a visitor parking area, information kiosk, campground and infrastructure, as described in the AFNM RMP.

### **Alternative 3**

Alternative 3 would remove a portion of livestock grazing from Badger Springs Recreation Areas by building a fence adjacent to the north of Badger Springs road (9287 road) and the 9003 road which forks off the 9287 road and runs just north of the Badger Springs road. The impact the recreational experience for visitors would be greater than the other action alternatives, though less than the no action alternative. This is due to the close proximity of the developments to the road and the trail parking, which would bring the cattle in close proximity to the recreation area and to the visitors. Visitor comments have indicated that cattle are an unwanted impact on the recreation experience on the Badger Springs Trail and the recreation area. Alternative 3 would limit future recreational developments in the north half of the recreation area.

### **Alternative 4**

Alternative 4 would remove livestock grazing from Badger Springs Recreation Area by building a fence approximately 1 ½ mile north from the Badger Springs parking area. This alternative would provide the greatest degree of separation between the recreation area and grazing use, and also provide for future recreational developments, information kiosk, campground and infrastructure as described in the AFNM RMP.

### **Alternative 5**

Alternative 5 would remove livestock grazing from Badger Springs Recreation Area by building a fence approximately ¼ mile north from the Badger Springs parking area, using the existing well adjacent to the Badger Springs Road, building a pipe line and pump house from the existing well to storage tanks and two water troughs built in a small drainage about ½ mile to the north behind the fence. The recreational use and grazing use would be separated by a ¼ mile distance. The construction of the pipe line and pump house would be a minor visual impact to the area, but would not impact construction of future recreational developments visitor parking area, information kiosk, campground and infrastructure as described in the approved FNM RMP.

## **Visual resources**

### *Affected Environment*

The BLM is required to manage public lands to protect their scenic views. BLM developed the Visual Resource Management (VRM) program to manage the scenic quality of the landscape and to reduce the impact of development on scenery.

The entire Badger Springs Recreation Area is managed as Visual Resource Management (VRM) Class III. The objectives of Class III are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. Visual resource objectives for Badger Springs Recreation Area emphasize retaining the current natural vistas while allowing visually sensitive visitor-related development. Visual resource impacts of a project are rated on Form 8400-4, Visual Contrast Rating Worksheet. The Visual Resource Rating Worksheet uses a table (see example *Table 9 Visual Resource Rating*) to document the degree of contrast, or how strongly the project will be visible against the form, line, color and texture of the existing land and vegetation in the character of the landscape. The table also documents the degree any structures of the project will contrast against the form, line, color or texture of the land and vegetation of the existing character of the landscape.

**Table 9 Visual Resource Rating**

		Features											
		Land Body(1)				Vegetation (2)				Structures (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
Elements	Form												
	Line												
	Color												
	Texture												

## Environmental Consequences

### No Action Alternative

A No Action Alternative would continue the current impacts on visual resources. The degree of contrast of the land, vegetation and structures are moderate in form, line, color and texture because the well, fence line and livestock are visible from the Badger Springs recreation area. There is virtually no distance separating the livestock grazing from the recreation area.

### Proposed Action

#### Fencing

The proposed action would build the fence on the ridgeline about ¼ miles north of the trail parking area. The fence would not be as visible as the no action alternative or alternative 3 because of the distance, which would result in a moderate degree of contrast against the surrounding form and line of the land and vegetation. The fence would also create a weak degree of contrast against the color and texture of the land and vegetation due to the distance.

#### Livestock Water

The degree of contrast against the form, line, color and texture of the livestock water structures would be weak because the well, troughs, and tanks would not be visible from the trailhead parking area or Badger Springs Road as they would be located in a low lying area north of the Badger Springs Recreation Area

entrance. The entrance is not visible from Badger Springs Trailhead area. Next to Alternative 4, the proposed alternative would present the least impact to visual resources as the developments are the farthest from the road and trail parking.

### **Alternative 3**

#### *Fencing and Livestock Water*

Alternative 3 proposes to use the existing well and build a fence line adjacent to the north of Badger Springs Road (9287 road) and the 9003 road which forks off the 9287 road and runs just north of the Badger Springs Road. The impact to visual resources would be greater than the other alternatives due to the close proximity of the developments to the road and the trail parking. The degree of contrast against the form and line of the land and vegetation would be strong and the contrast in color and texture would be moderate because the well, well house and fence line would be adjacent to the recreation area and highly visible. The well house structure would also create a strong degree of contrast against the form and line of the land and a moderate one to the color and texture as it would be adjacent to the recreation area and highly visible.

### **Alternative 4**

#### *Fencing*

Alternative 4 would have no impact to the visual resources in the Badger Springs Area. The proposed fence and cattle guard location are approximately 1 mile north of the recreation area and the degree of contrast of the elements of form, line, color and texture from modifications to the land and vegetation or from the placement of structures would be weak as they would not be visible from the Badger Springs Recreation Area.

#### *Livestock Water*

Alternative 4 features no water development, so there would be no impact to the visual resources in the Badger Springs Area.

### **Alternative 5**

#### *Fencing and Livestock Water*

Alternative 5 proposes to build a fence about a ¼ mile north from the Badger Springs road, construct a pipeline from the existing well to proposed storage tanks and two troughs in a small drainage just north of the fenceline. This would result in a moderate degree of contrast to the form, line and color of the land and vegetation and a weak degree of contrast to the color and texture due to the distance from the Badger Springs Recreation Area as the cleared area for the pipeline may be visible. It is possible some portion of the storage tanks would be visible creating a weak degree of contrast in line, form, color and texture between the structures and surrounding landscape. The impact to visual resources would be greater than the proposed alternative and alternative 4, and significantly less than alternative 3 and the no action alternative.

## **Fire Management**

### *Affected Environment*

Fire behavior within the analysis area is dependent on the amount of precipitation that falls during the growing season. The current vegetation type is best represented by fire behavior fuel model GR1. The GR1 model represents short patchy grass and exhibits a moderate rate of spread (ROS) and low flame lengths (FL). The GR2 model best represents continuous grass that is about 1-3 feet tall and exhibits a high ROS and FL (Scott & Burgan, 2005, pp. 25,26, and 27). Grass fuel models are dynamic and may change yearly. Production of fuel (grass) is mainly based on the amount of winter precipitation. Favorable growing conditions, above average rainfall, usually result in increased fuel loading and continuity. Conversely, poor growing conditions

usually have the opposite effect. A portion of the vegetation in the project area is currently dominated by red brome, mesquite, cat claw, buckwheat, and salt cedar. The primary carrier of fire is the red brome

Historical analysis of fire occurrence in the project area showed one fire occurred in 2001 that was a quarter acre in size.

## **Environmental Consequences**

### **No Action Alternative**

Under the No Action Alternative there would be no impacts or change to fire behavior from current conditions. The alternative maintains a fire behavior fuel model GR1.

### **Proposed Action**

#### *Fencing*

The proposed action may increase the amount of fine fuel (grass) across the project area (240 acres) from its current fire behavior fuel model GR1 to a GR2. This would increase the horizontal continuity of the fine fuels, making a more homogenous fuel bed. This would mainly occur in high production years. The result of this change would be an increase in flame lengths and ROS.

#### *Livestock Water*

Under this alternative there would be no impacts to fire management.

### **Alternative 3**

#### *Fencing*

Similar impacts as the proposed action with an increase in fine fuels, flame lengths, and ROS over 130 acres.

#### *Livestock Water*

Under this alternative there would be no impacts to fire management.

### **Alternative 4**

#### *Fencing*

Similar impacts as the proposed action with an increase in fine fuels, flame lengths, and ROS over 640 acres.

#### *Livestock Water*

Under this alternative there would be no impacts to fire management.

### **Alternative 5**

#### *Fencing*

Impacts would be the same as the Proposed Action.

#### *Livestock Water*

Under this alternative there would be no impacts to fire management.

## Public Health and Safety

### *Affected Environment*

Water quality of ground water sources in the Badger Springs area potentially poses risks to public health and safety. In August 2011, analysis of water samples collected from the Badger Springs Well (T. 10 N., R. 2 E., Section 24 SW SW NE) were completed by Xenco Laboratories, 3725 E. Atlanta Ave., Phoenix, AZ 85040. Results of the water samples reported Arsenic levels ranging from 1.030 mg/L. Results are reported under Report Number 424982. In November 2011, another analysis was completed. The reported Arsenic levels ranged from 0.58 to 0.61 mg/L. This report is located at the BLM Phoenix District Office.

Arsenic is a semi-metal element in the periodic table. It is widely distributed in the biosphere and earth's crust and can enter drinking water supplies from natural deposits in the earth or from agricultural and industrial practices. Arsenic can also be a major source of contamination for livestock drinking ground water. Arsenic is introduced into water through the erosion and weathering of soil, minerals, and ores, from industrial effluents, and via atmospheric deposition (Hindmarsh & McCurdy, 1986) (Hutton & Symon, 1986). Within the Agua Fria groundwater basin, mining activities of the past have left tailings piles from ore processing in a variety of manners, including addition of processing agents such as mercury and cyanide. The ores contained various amounts of materials such as arsenic, lead, and zinc. In addition, the highly mineralized nature of some portions of the Bradshaw Mountains is a source for natural minerals occurrence including arsenic. While groundwater quality throughout the basin is unusually homogenous, areas where sodium is the major cation are found in the southern portion of the basin along the flanks of the Bradshaw Mountains stretching to the floodplain of the Agua Fria River. These sodium chemistry sites frequently have arsenic and fluoride concentrations above health-based water quality standards, often by several orders of magnitude, such as the existing Badger Well, which also happens to be near the proposed well site. Determining the occurrence and cause of the elevated arsenic levels in the basin is less predictable though as sites where the dominant cation was calcium or mixed chemistry also had instances of elevated arsenic levels.

Arsenic contains carcinogenic properties to humans, at low level exposure. Potential human health effects include: skin damage or problems with circulatory systems, and may have increased risk of cancer. Non-cancer effects can include thickening and discoloration of the skin, stomach pain, nausea, vomiting; diarrhea; numbness in hands and feet; partial paralysis; and blindness. Arsenic has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and prostate. Carcinogenic properties are not a major issue for livestock health, as their lifespan is short. The bioaccumulation of arsenic in livestock used for meat may be a concern of meat quality (Canada, 2010).

The EPA has set the arsenic standard for drinking water at 0.010 parts per million (or 0.010 mg/L) to protect consumers served by public water systems from the effects of long-term, chronic exposure to arsenic (USEPA, 2009). The recommended safe level of arsenic in water for livestock use is 0.200 ppm or 0.200 mg/L (Lardy & Stoltenow, 1999). The Arsenic levels reported for the Badger Springs Well far exceeds the recommend safe levels for both human and livestock consumption. Currently, recreationists, domestic animals, and other members of the public can potentially become exposed to arsenic.

## Environmental Consequences

### **No Action Alternative**

#### *Fencing and Livestock Water*



Under the no action alternative, there would be no impacts to current conditions. The area would continue to pose potential health and safety risks from arsenic contamination to recreationists, domestic animals, and the general public.

## **Proposed Action**

### *Fencing and Livestock Water*

Under the proposed action, the health and safety risks to the public, domestic animals, and livestock would likely be reduced by closing the Badger Springs well (a known contaminated water source in the Badger Springs Recreation Area) and reducing the potential of accidental arsenic exposure.

The proposed new well and developed livestock water would be located approximately ½ mile northwest of Badger Springs well and outside of Badger Springs Recreation Area. The new livestock water has the potential of containing arsenic and other ground water contaminants; however, the livestock water would not be located in close proximity to the Badger Springs trailhead and parking area where recreationists would be more likely to encounter the contaminated water source. The new livestock water would be hidden from view of the recreation area in a saddle north of the information kiosk.

## **Alternative 3**

### *Fencing and Livestock Water*

Impacts would be the same as the No Action Alternative.

## **Alternative 4**

### *Fencing and Livestock Water*

Under Alternative 4, health and safety risks would be greatly reduced because the known contaminated water source (Badger Springs well) would be closed from use and risk of accidental arsenic exposure would be eliminated. No new well would be developed, eliminating the risk of additional arsenic exposure.

## **Alternative 5**

### *Fencing and Livestock Water*

Under Alternative 5, the health and safety risks to the public, domestic animals, and livestock maybe reduced by relocating the livestock water approximately ¼ mile north of Badger Springs trailhead and parking area. The new location is outside of Badger Springs Recreation Area and not in close proximity to the Badger Springs Trailhead and parking area. In addition, the relocated livestock water would be hidden from view of the recreation area in a saddle north of the existing well.

This alternative would continue to use the known contaminated water source (Badger Springs well) for livestock water. There is a small risk of accidental arsenic exposure by the public and domestic animals using this area north of Badger Springs Recreation Area.

## **Cumulative Impacts**

Council on Environmental Quality regulations for implementing NEPA define cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

The BLM NEPA Handbook states that the purpose of the cumulative effects analysis is to ensure that decision-makers consider the full range of the consequences of the Proposed Action, No-Action Alternative and three additional alternatives. If the actions under any of the alternative have no direct or indirect effect on a resource, then the cumulative impacts on that resource are not addressed below.

*Table 10 Cumulative Impacts* summarizes past, present, and reasonably foreseeable future actions. Past actions are considered those that have occurred within the past 50 years. Present actions are considered those occurring at the time of this evaluation. Future actions are those that are in planning stages with a reasonable expectation of occurring over the next 20 years.

**Table 10 Cumulative Impacts**

<b>Action</b>	<b>Description</b>	<b>Resources Affected</b>	<b>Area of Impact</b>
Past - Borrow Pit	The Badger Springs borrow pit was in operation during the construction of Interstate 17.	All	Approximately 40 acres were excavated as a borrow pit. Actions led to the degradation of Badger Springs Wash. The area is now colonized by saltcedar; soil erosion is evident; route proliferation is common; quality and quantity of wildlife habitat reduced.
Past – Livestock Grazing	The Badger Springs area and Cordes allotment were part of a historic livestock driveway for sheep and cattle. Livestock grazing has been authorized by the Arizona State Land Department and BLM.	Wildlife, Livestock Grazing, Soils, and Vegetation	Black Canyon Corridor and Cordes Allotment (12,451 acres)
Past- I-17 Construction	Interstate 17 was completed in 1968. It was built to connect Phoenix to Flagstaff.	Wildlife and Livestock Grazing	The completion of I-17 effectively divided and isolated two populations of pronghorn. No known crossings by pronghorn following the completion of I-17 are known.
Past – Designation of the Agua Fria National Monument	By Presidential Proclamation, 70,900 acres of public land was designated as the Agua Fria National Monument.	All Resources	70,900 acres
Past - Initial Recreation Site Development	Road Improvement and bathroom installation	Recreation and Wildlife	< 100 acres
Past - Grazing Exclosure	In 2000, a grazing exclosure was erected to exclude cattle grazing from portions of Badger Springs Wash.	Livestock Grazing and Wildlife	300 acres of Badger Springs Wash were removed from grazing.
Present – Livestock Grazing	In 2010, two 10 year grazing leases for sheep and cattle operations	Wildlife, Livestock Grazing, Soils, and	12,451 acre – Cordes Allotment

	were reissued under the Appropriations Act.	Vegetation, Recreation	
Present - OHV Barrier	In Spring 2011, OHV barriers were installed in Badger Springs Wash to prevent OHV damage to riparian areas.	Recreation and Livestock Grazing	The installation of OHV barriers at both ends of Badger Springs Wash removed 2.2 miles of unauthorized OHV access. Vehicle access to portions of an enclosure fence is limited.
Future - Badger Springs Recreation Site Development	Actions to manage the Badger Springs Recreation area will likely include OHV control, facilities development, trail and road improvements,	Recreation and Wildlife	The Badger Springs Recreation Planning area is ~250 acres. Future developments may include additional parking areas, restrooms, kiosks, campgrounds, and infrastructure.
Future – Badger Springs Salt Cedar Weed Treatments and Vegetation Rehabilitation Project	Mechanical and Herbicide treatments to remove Salt Cedar from Badger Springs Recreation Area will likely improve Rangeland health and reduce the spread of this target species in the immediate area, Badger Springs Wash, and downstream of the Agua Fria River.	Rangeland Health, Soils, Vegetation, Noxious Weeds/Non Native Invasive Species, Wildlife	Approximately 100 acres

### Livestock Grazing

Past and present actions have impacted livestock grazing in the Black Canyon Corridor. Portions of areas once available for livestock grazing have been removed. Future foreseeable actions are not expected to impact livestock grazing. Cumulative impacts from the Proposed Action, and Alternatives 3, 4, and 5 would be minimal. The alternatives propose reducing acres available for grazing. The reduction ranges from 1 to 8% of the entire Cordes Allotment. Collectively the overall reduction would be a minor impact to the livestock operations.

### Vegetation

Past and present actions have contributed removal, alteration, and damage to vegetation. Incremental impacts from future actions are expected to be minor or temporary. Impacts from all action alternatives would be minimal.

### Soils

Past and present actions have contributed to soil loss and compaction. Impacts from the Proposed Action; and Alternatives 3, 4, and 5 would be temporary and minimal. All the alternatives may cause small areas of soil compaction and erosion during construction. Implementation of approved mitigation and control measures would minimize impacts. Collectively the overall impacts to soil resources would be minor.

### **Noxious Weeds/Non Native Invasive Species**

Past and present actions have introduced and contributed to the spread of invasive, nonnative species within the area of analysis, but is expected to be reduced by future actions. All the alternatives (excluding the No Action) may cause minor incremental increases in weed species however; implementation of approved mitigation and control measures (proposed under the action alternatives) would minimize this risk. Noxious weeds and invasive non-native species may slightly increase within the area of analysis in spite of mitigation measures that would be in place for ground disturbing activities.

### **Fish, Wildlife and Special Status Species**

None of the alternatives presented in this EA would alter current habitat conditions for an extended period of time. Any water developments would have a negligible effect on wildlife and special status species, which would be unaffected by cumulative impacts. An addition of a fence near the Badger Springs Recreation Area would further fragment the habitat of wildlife, particularly pronghorn moving from Black Mesa to Perry Mesa. All alternatives that propose fence construction would reduce wildlife egress and ingress. However, all alternatives use wildlife friendly design to mitigate these impacts. Past actions have had impacts to wildlife species, particularly pronghorn antelope. Following the completion of Interstate 17 and other highways coupled with the urbanization of Prescott Valley, AZ, populations of pronghorn will continue to remain isolated and decline west of I-17. Populations to the east of I-17, which include the effected environment, will remain unimpeded by expected human-constructed projects.

The use of the area in the 1960s as a borrow pit for sand and gravel for the construction of I-17 reduced the quality and quantity of the habitat for wildlife in 40 acres of the Badger Springs area. Native plants were removed and the area recolonized by saltcedar. Hiding cover is currently present for wildlife which is provided by saltcedar trees. This cover also creates a visual barrier for pronghorn antelope which impedes ingress and egress to other areas. Future actions will have an effect on wildlife. The treatment of saltcedar and vegetation rehabilitation will temporally remove hiding cover, thus improving movement corridors for pronghorn, but vegetation rehabilitation will grow and provide hiding cover for other wildlife species. The recreation development of less than 100 acres in the Badger Springs Recreation Area may impact wildlife though human occupation of the area that causes animal avoidance.

### **Riparian Zones**

Environmental impacts to riparian resources have been identified in the effected environment portion of this EA. Impacts from fence installation and presence on the landscape are similar to past activities in the Badger Springs Recreation area. Water has been and will be pumped near the Badger Springs area for livestock use. Any alternatives that discuss providing water are identical to current conditions.

### **Cultural Resources**

Any of the Alternative Actions 1, 2, 3, 4, and 5, would result in no cumulative impacts, if the mitigation methodology of avoidance, as outlined, is observed.

### **Recreation**

Past and present actions have impacted recreation in what is now the Badger Springs Recreation Area. The development of the borrow pit and construction of Interstate 17 provided easy public access to the area. When the land in the area was acquired as public land managed by the BLM in 1990, increasing numbers of recreation visitors began to voice concerns about livestock grazing in the area through contacts with the BLM office. The designation of the Monument in 2000 began a steady increase in the number of visitors, who continued to express concern that livestock grazing be separated from the recreation area and Badger

Springs Wash. These concerns have come in the form of contacts with the BLM office, comments in visitor register logs, and comments and meetings regarding development of the Monument RMP. These concerns and the increasing number of visitors to the area resulted in the RMP decision “*GM-6. Remove the immediate area surrounding Badger Springs Wash from the Cordes allotment to provide for developing a visitor parking area, information kiosk, campground and infrastructure.*”

Today, the Badger Springs Recreation Area is the most visible and visited area of the Monument. In 2010, 22,000 people visited Badger Springs. Most recreation impacts to the area occurred before the development of the current vault toilet, trailhead, information kiosk, route signs, vehicle barriers, improved road and parking area. These developments have significantly defined the recreation area and mitigated impacts to recreation. Future recreation site development and weed treatments in the area would be positive cumulative impacts on recreation under each alternative.

There would be no additional cumulative impacts from the No Action Alternative. Cumulative impacts to recreation would be greatest from Alternative 3, which would place the fence alongside the road and livestock within the Badger Springs Recreation Area. This would both impact the current recreation experience and preclude potential future recreation site development. Cumulative impacts to recreation would be least with Alternative 4, which would provide more than a mile separation between the recreation area and livestock fence, allowing the greatest flexibility for recreation site management and development. Cumulative impacts from the Proposed Action and Alternative 5 would be similar. While impacts would be greater than those of Alternative 4, cumulative impacts from the Proposed Action and Alternative 5 would be minor, and far less than Alternative 3.

### **Visual Resources**

Past and present actions have impacted visual resources in the Badger Springs area. The development of the borrow pit and construction of Interstate 17 impacted the visual character of the area. Livestock grazing has had little effect on visual resources. Designation of the Monument was followed by initial recreation site development including a vault toilet, trailhead, information kiosk, route signs, vehicle barriers, improved road and parking area.

Future actions under Alternative 3 would result in the highest cumulative impact to visual resources, as the fenceline, well house, and livestock would be within the recreation area and highly visible. Alternative 3 would also compress the area available for future development of recreation area amenities, making such amenities more visually apparent. Future actions under all other alternatives (excluding the No Action Alternative) would result in minor impacts to visual resources.

### **Fire Management**

Past and present actions have increased wildfire occurrences along I-17 from human caused fire ignitions. No impacts are expected from reasonably foreseeable future actions. There may be a small increase in fire occurrences in the Badger Springs Recreation Area from higher fuel loads and visitor use for all alternatives. These impacts are expected to be minimal.

### **Public Health and Safety**

There would be no cumulative impacts to Public Health and Safety from the alternatives analyzed in this EA.

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## Maps

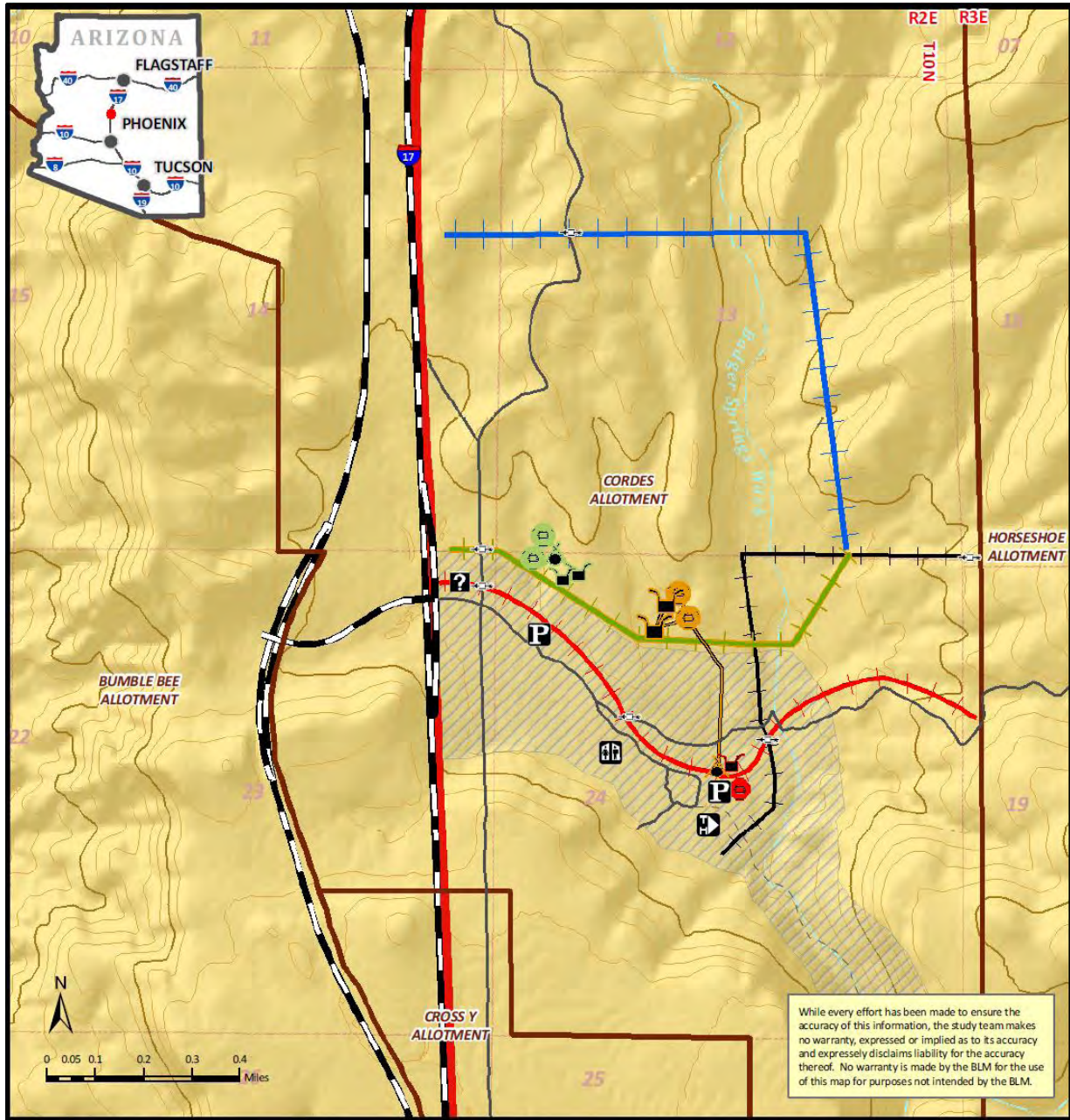
Map A.	Project Vicinity
Map B.	All Alternatives
Map C.	No Action Alternative
Map D.	Proposed Action Alternative
Map E.	Alternative 3
Map F.	Alternative 4
Map G.	Alternative 5
Map H.	Badger Springs Pasture







## Map B. All Alternatives

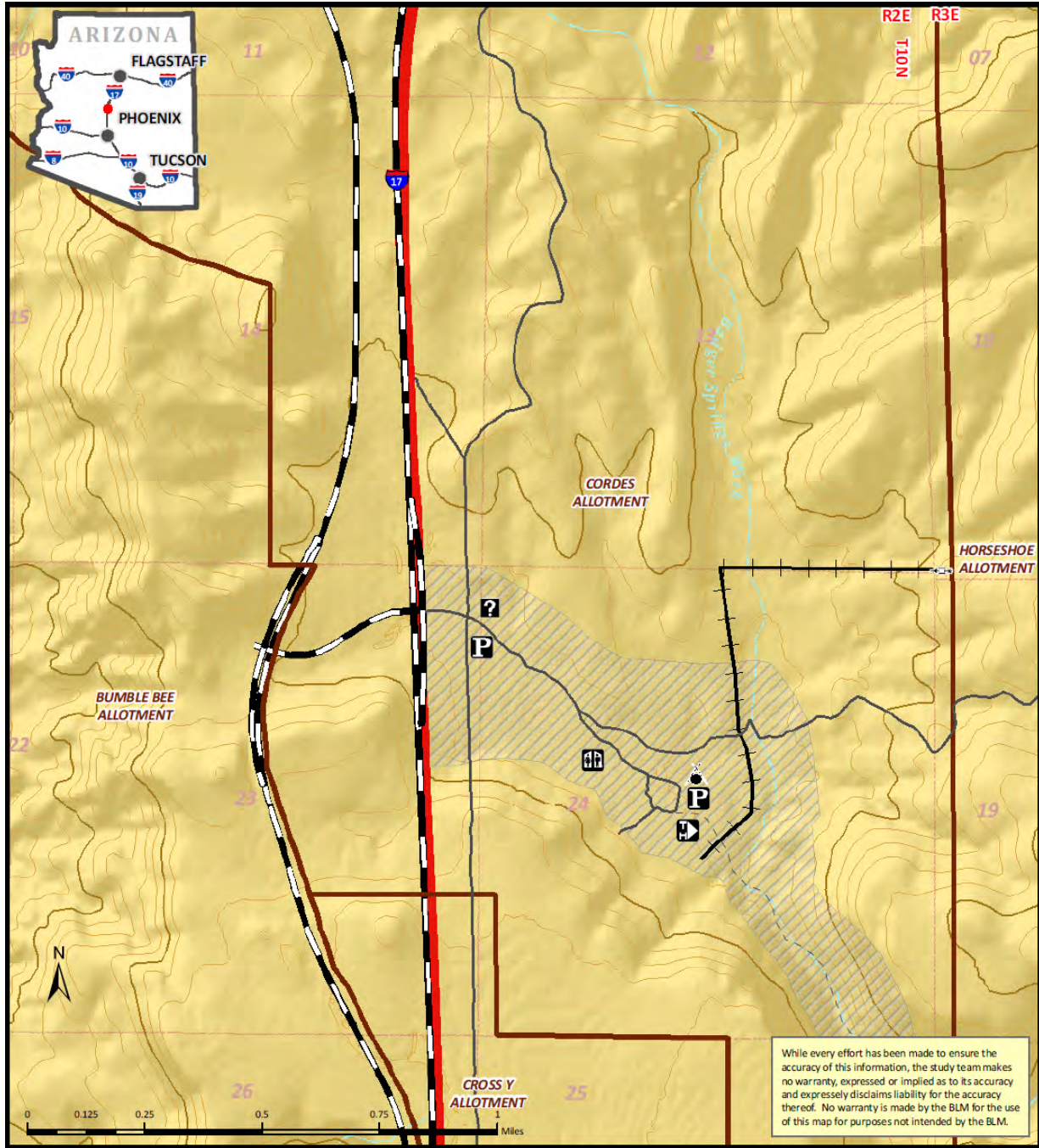


### Proposed Badger Springs Fencing and Well Relocations - All Alternatives

<b>Alternative 1 - No Action</b>	<b>Alternative 3</b>	<b>Alternative 5</b>	<b>Base</b>
Existing Enclosure	Southern Fence	Midway Fence	Trailhead
Existing Well	New Trough	New Pipeline	Parking
<b>Alternative 2 - Proposed</b>	New Tank	New Troughs	Restroom
Midway Fence	<b>Alternative 4</b>	New Well	Kiosk
Proposed Well	Northern Fence	New Tanks	Cattleguards
Proposed Tanks			BLM Roads
Proposed Troughs			Grazing Allotments
			Badger Springs Recreation Area
			Agua Fria N.M.



# Map C. No Action Alternative

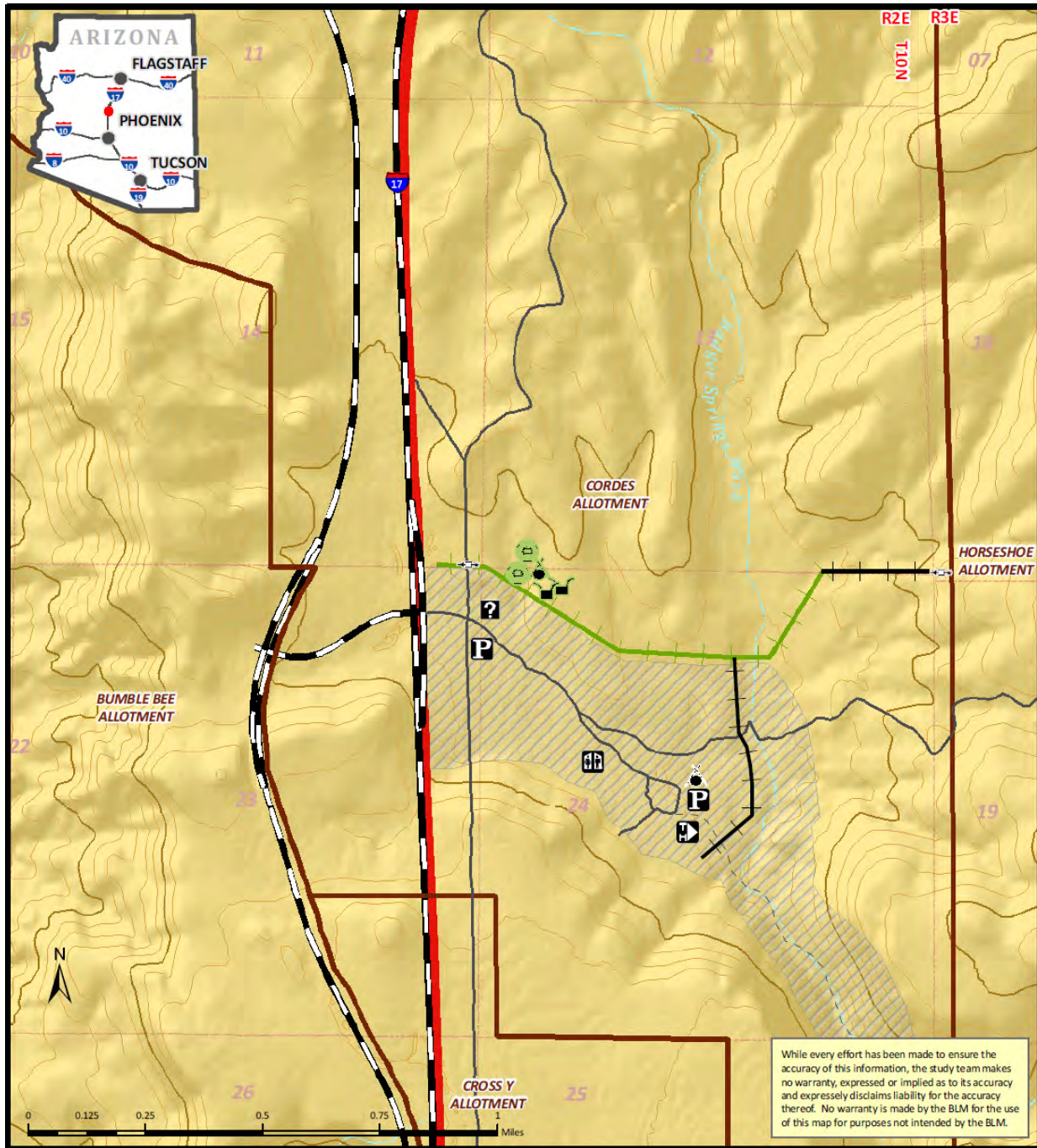


## Proposed Badger Springs Fencing and Well Relocations - No Action Alternative

- |                                  |             |              |                    |                                |
|----------------------------------|-------------|--------------|--------------------|--------------------------------|
| <b>Alternative 1 - No Action</b> | <b>Base</b> | Restroom     | BLM Roads          | Badger Springs Recreation Area |
| Existing Enclosure               | Trailhead   | Cattleguards | Grazing Allotments | Agua Fria N.M.                 |
| Existing Well                    | Parking     | Kiosk        |                    |                                |



## Map D. Proposed Action Alternative

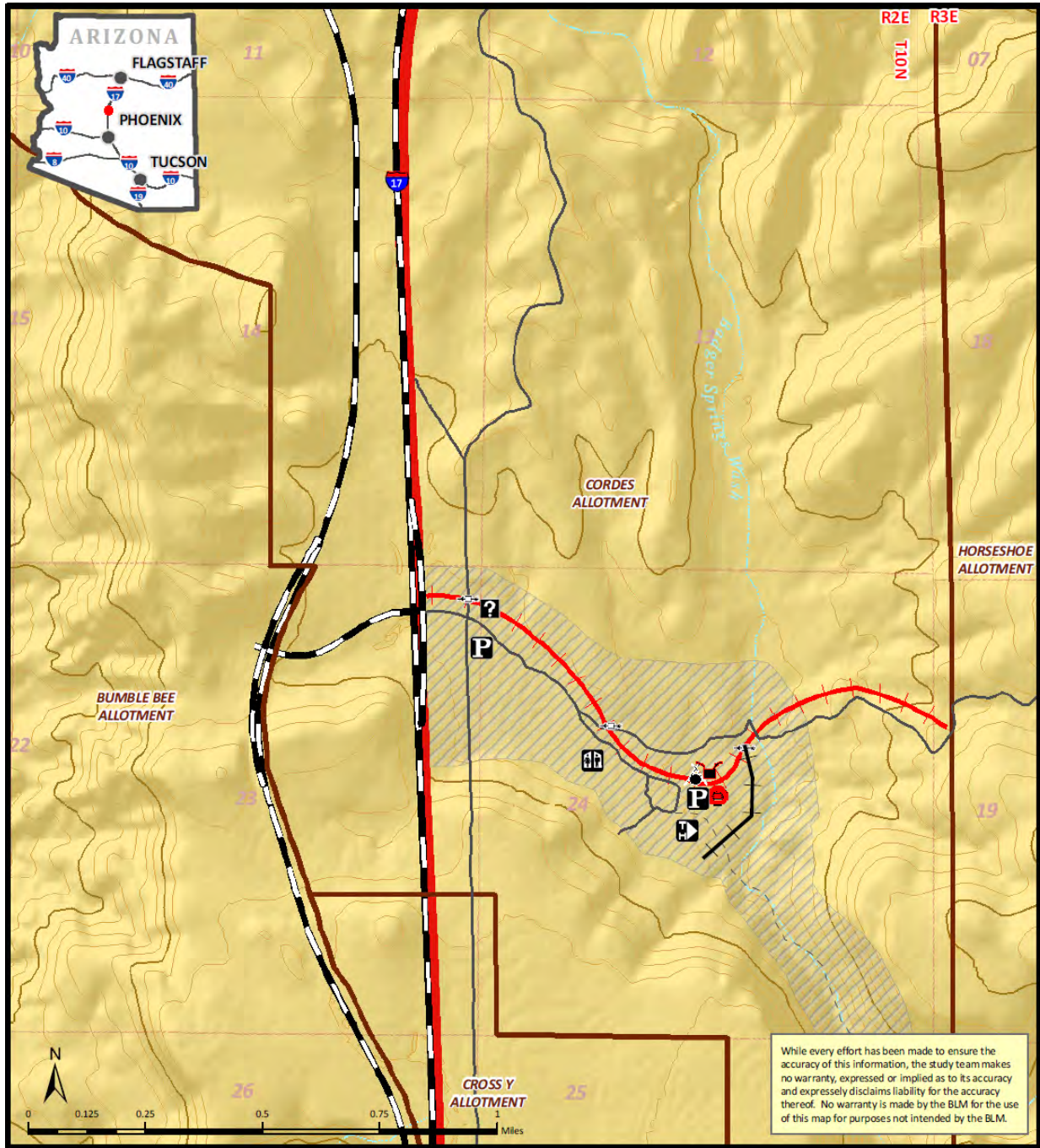


### Proposed Badger Springs Fencing and Well Relocations - Proposed Alternative

- |                                 |             |                    |                                |
|---------------------------------|-------------|--------------------|--------------------------------|
| <b>Alternative 2 - Proposed</b> | <b>Base</b> |                    |                                |
| Midway Fence                    | Trailhead   | Cattleguards       | Badger Springs Recreation Area |
| Proposed Well                   | Parking     | Existing Enclosure | Agua Fria N.M.                 |
| Proposed Tanks                  | Restroom    | BLM Roads          |                                |
| Proposed Troughs                | Kiosk       | Grazing Allotments |                                |



Map E. Alternative 3

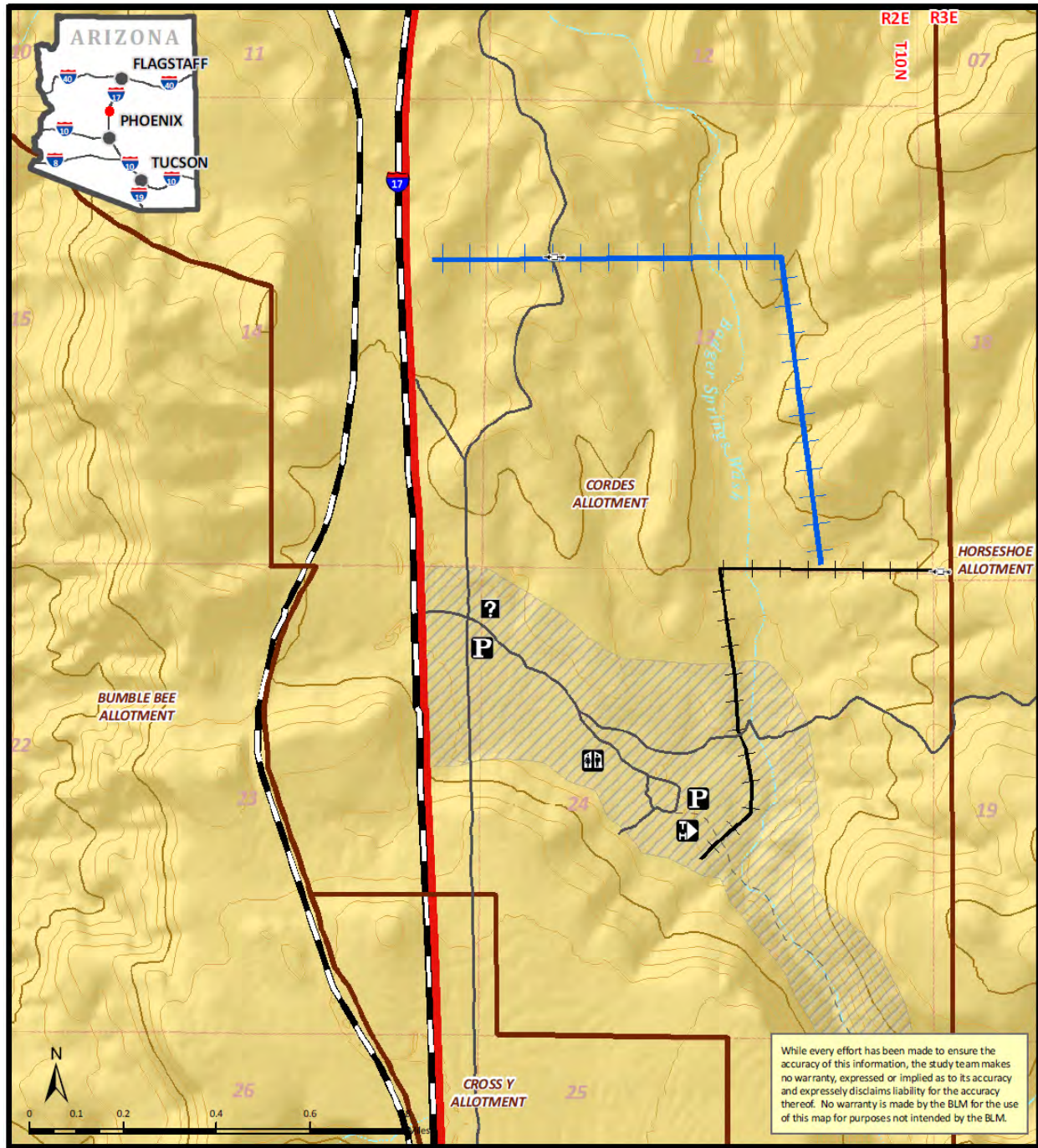


Proposed Badger Springs Fencing and Well Relocations - Alternative 3

- |                      |                |             |           |  |                                |
|----------------------|----------------|-------------|-----------|--|--------------------------------|
| <b>Alternative 3</b> |                | <b>Base</b> |           |  |                                |
|                      | Southern Fence |             | Trailhead |  | Cattleguards                   |
|                      | New Trough     |             | Parking   |  | Existing Enclosure             |
|                      | New Tank       |             | Restroom  |  | BLM Roads                      |
|                      |                |             | Kiosk     |  | Grazing Allotments             |
|                      |                |             |           |  | Badger Springs Recreation Area |
|                      |                |             |           |  | Agua Fria N.M.                 |



Map F. Alternative 4

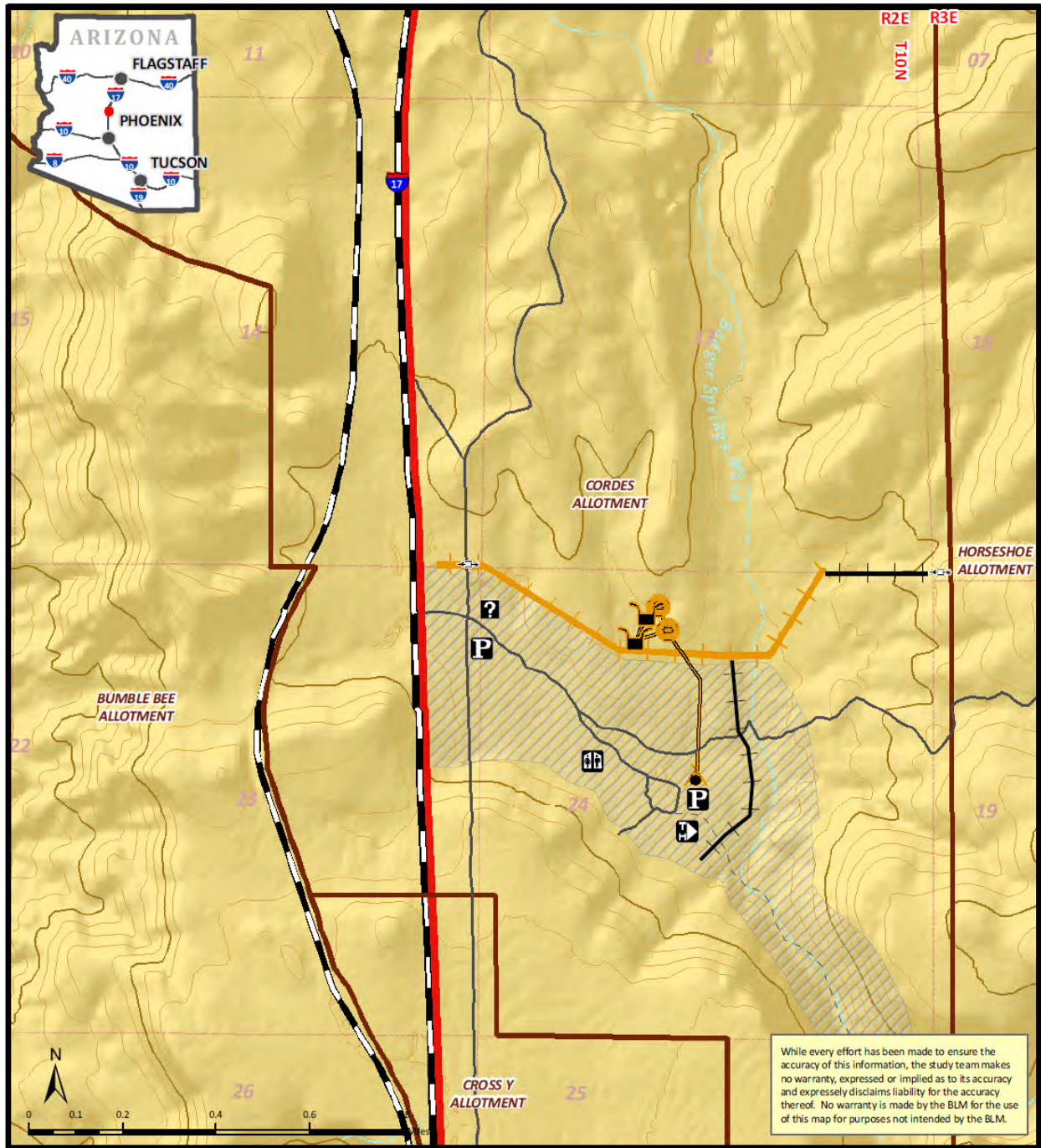


Proposed Badger Springs Fencing and Well Relocations - Alternative 4

- |                                     |   |   |  |
|-------------------------------------|---|---|--|
| <p>Alternative 4</p> Northern Fence | <p>Base</p> Trailhead<br>Parking<br>Restroom<br>Kiosk | Cattleguards<br>Existing Enclosure<br>BLM Roads<br>Grazing Allotments | Badger Springs Recreation Area<br>Agua Fria N.M. |
|-------------------------------------|---|---|--|



Map G. Alternative 5

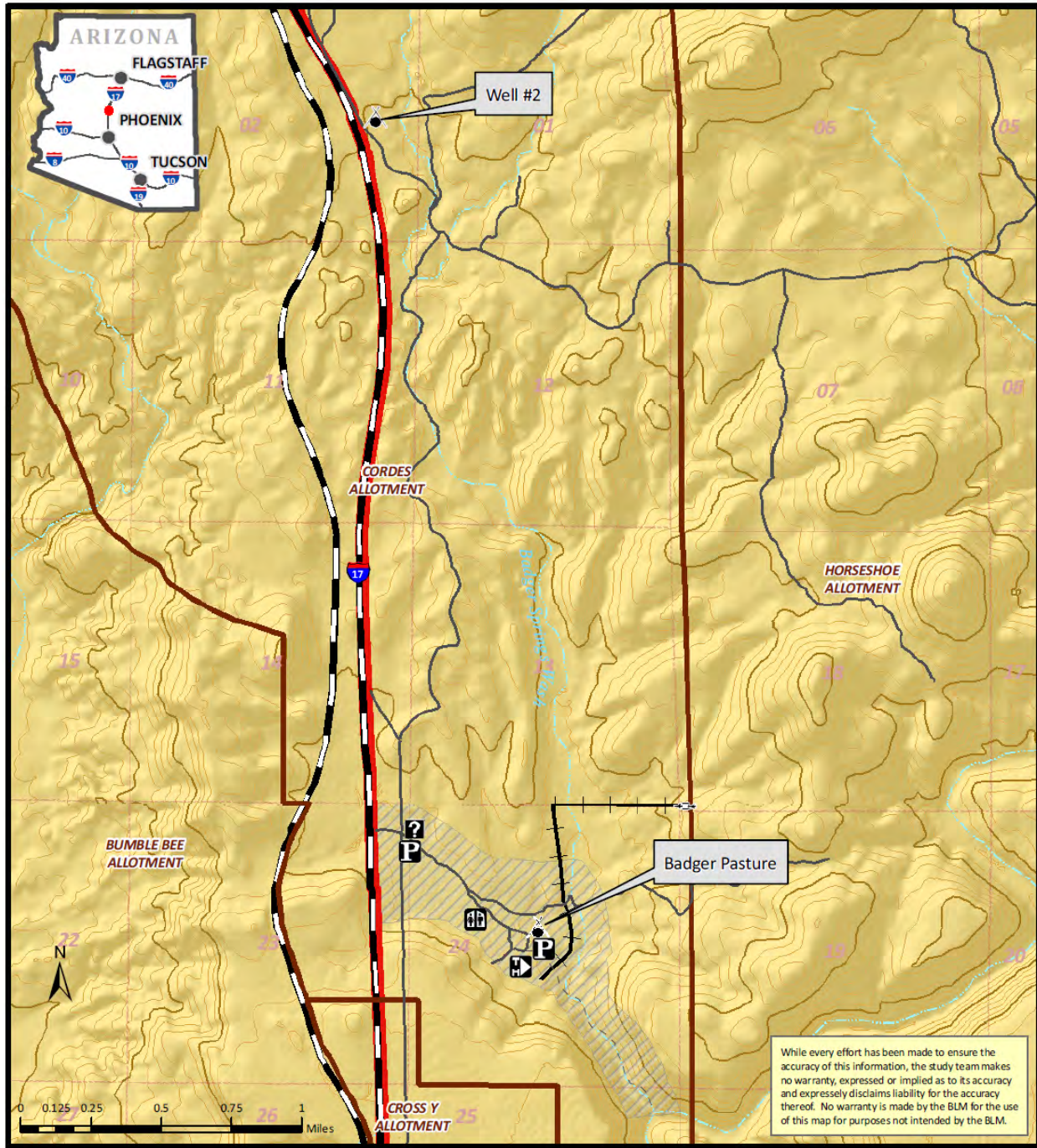


Proposed Badger Springs Fencing and Well Relocations - Alternative 5

- |                      |           |             |                    |                                |  |
|----------------------|-----------|-------------|--------------------|--------------------------------|--|
| <b>Alternative 5</b> |           | <b>Base</b> |                    |                                |  |
| Midway Fence         | New Well  | Trailhead   | Cattleguards       | Badger Springs Recreation Area |  |
| New Pipeline         | New Tanks | Parking     | Existing Enclosure | Agua Fria N.M.                 |  |
| New Troughs          |           | Restroom    | BLM Roads          |                                |  |
|                      |           | Kiosk       | Grazing Allotments |                                |  |



# Map H. Badger Springs Pasture



## Cordes Allotment/ Badger Springs Pasture - No Action Alternative

- |                                  |              |          |                                |
|----------------------------------|--------------|----------|--------------------------------|
| <b>Alternative 1 - No Action</b> | <b>Base</b>  |          |                                |
| Existing Enclosure               | Trailhead    | Restroom | BLM Roads                      |
| Existing Well                    | Parking      | Kiosk    | Grazing Allotments             |
|                                  | Cattleguards |          | Badger Springs Recreation Area |
|                                  |              |          | Agua Fria N.M.                 |