BLM

# U.S. Department of the Interior
# Bureau of Land Management

**Environmental Assessment**

**DOI-BLM-AZ-P010-2014-0030-EA**

**January 2015**

# Hassayampa Wildland-Urban Interface Fire Defense System Environmental Assessment


Hassayampa Field Office
21605 North 7th Avenue
Phoenix, AZ 85027
Phone: (623) 580-5500
Fax: (623) 580-5580

# [Hassayampa Wildland-Urban Interface Fire Defense System]

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# 1. INTRODUCTION

On August 22, 2002, President Bush established the Healthy Forests Initiative (HFI). This initiative directs the Department of Agriculture, Department of the Interior (DOI), and Council on Environmental Quality (CEQ) to improve regulatory processes to ensure more timely decisions, greater efficiency, and better results in reducing the risk of catastrophic wildland fires (U.S. Forest Service [USFS] 2012).

In December 2002, the CEQ provided new guidance for the preparation of Environmental Assessments (EAs) for fuel reduction and fire-adapted ecosystem-restoration projects. This guidance included the following major points (USFS 2012):

- The EA should be a "concise public document" that addresses four elements: (1) need for the Proposed Action, (2) description of alternatives, (3) description of the environmental impacts of the Proposed Action and No Action Alternative, and (4) a list of the agencies and persons consulted;
- The EA should reference any supporting data, inventories, and other documents that were relied on in its presentation;
- Interested agencies and the public must be involved in EA preparation to the extent practicable;
- When a Finding of No Significant Impact (FONSI) is prepared, the EA should be attached and incorporated by reference;
- When the EA and FONSI are ready, reasonable public notice of their availability must be provided; and
- If an Environmental Impact Statement (EIS) is needed, a Notice of Intent (NOI) must be published describing the Proposed Action and No Action Alternative, the scoping process, and the name of the agency contact.

In 2003, Congress passed the Healthy Forests Restoration Act (HFRA) (Public Law [P.L] 108-148). For all EAs completed under the HFRA, the Bureau of Land Management (BLM) must use the *Guidance for Environmental Assessments for Forest Health Projects*, provided in a December 9, 2002 memorandum from the CEQ. This EA has been prepared in accordance with CEQ's guidance for preparing National Environmental Policy Act (NEPA) documents authorized under the HFRA of 2003 (USFS 2012).

The project area being analyzed encompasses multiple treatment units in areas throughout the Hassayampa Field Office (HFO) of the Phoenix District Bureau of Land Management (Map 1). The units are located within the Wildland-Urban Interface (WUI) of multiple communities and

many of the treatment units were previously treated, although they were analyzed using a method that does not allow continued maintenance. Conditions in these areas have returned to pre-treatment levels of fuel loading and they are in need of retreatment and maintenance.

## 1.1 Purpose and Need for Action

The purpose and need of the action is to reduce the intensity and severity of future wildland fires in the WUI by reducing hazardous fuels on the ground and by creating a defensible buffer to provide for a safer suppression environment. Specifically, this would be accomplished by:

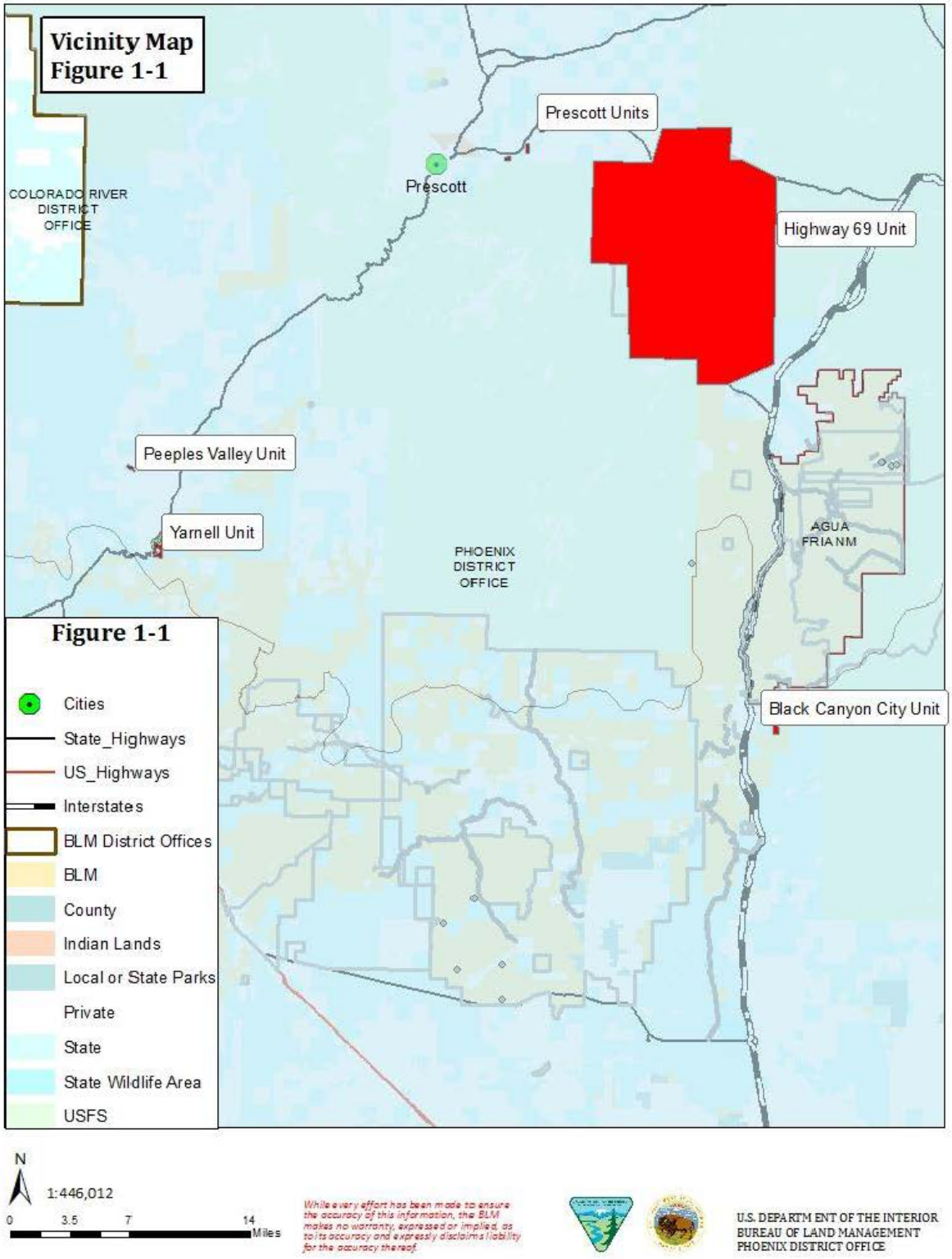
- Reducing shrub density from current hazardous levels
- Reducing overall fuel loading (burnable above-ground biomass) in the WUI
- Reducing average height and decreasing horizontal continuity to reduce anticipated fire behavior in WUI
- Reducing shrub fuel loadings in hazard areas in order to reduce fire behavior in the WUI
- Restoring native vegetation in areas where non-native and noxious weeds have taken over in the WUI.

Fire Regime Condition Class (FRCC) is an interagency, standardized tool for determining the degree of departure from reference condition vegetation, fuels and disturbance regimes (http://www.frcc.gov/). Assessing FRCC can help guide management objectives and set priorities for treatments. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure is described as changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure and mosaic pattern); fuel composition; fire frequency, severity and pattern; and other associated disturbances (e.g. insects and disease mortality, grazing and drought). The three classes are based on low (0-33% departure; FRCC1), moderate (34-66% departure; FRCC2) and high (67-100% departure; FRCC3) departure from central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by a series of indicators of the potential risks that may result from the changes to the associated ecological components when disturbance is applied.

The Fire Regime Condition Class (FRCC) for the most of the project area is FRCC 2 (moderate). This indicates that fire regimes and vegetation characteristics have been moderately altered from their historical range of natural variability. Fire frequencies are departed from historical frequencies by multiple return intervals. Risk of losing key ecosystem components is moderate. The need for the project is to move the area toward FRCC 1.

Additional goals for the project include:

- Reduce the likelihood for loss of life, property and community infrastructure to include watershed, due to catastrophic wildfire in and around the communities.
- Provide fuel breaks in order to keep fires away from the community and from reaching unmanageable sizes.
- Protect natural resources from unacceptable damage by fire in a cost-effective manner with a high regard for private property and public safety.
- Create conditions necessary for re-introduction of useful fire back into the ecosystem.
- Reduce the threat of a wildfire damaging public lands from an escaped fire on private lands.


Vicinity Map
Figure 1-1
Prescott Units
Prescott
COLORADO RIVER DISTRICT OFFICE
Highway 69 Unit
Peeples Valley Unit
Yarnell Unit
PHOENIX DISTRICT OFFICE
AGUA FRIA NM
Black Canyon City Unit
Figure 1-1
Cities
State_Highways
US_Highways
Interstates
BLM District Offices
BLM
County
Indian Lands
Local or State Parks
Private
State
State Wildlife Area
USFS
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## 1.2 Decision to be Made

The decisions to be made for this EA include the following:

- Whether or not the Proposed Action is consistent with land use plan and fire management plan for the project area;
- Whether or not to issue a FONSI or to prepare an EIS; and
- Whether or not to implement the proposed WUI treatments.

## 1.3 Land Use Plan Conformance

The Proposed Action is in conformance with, and tiers to the analysis presented in the Bradshaw-Harquahala Proposed Resource Management Plan/Final Environmental Impact Statement completed for the *Bradshaw-Harquahala Record of Decision and Approved Resource Management Plan (April 2010).* Desired Future Conditions and Management actions are as follows:

### *1.3.1 Fire Management*

**FM-1.** Fire is recognized as a natural process in fire-adapted ecosystems and is used to achieve objectives for other resources.

**FM-2.** Fuels in the Wildland Urban Interface (WUI) are maintained at non-hazardous levels to provide for public and firefighter safety.

**FM-3.** Prescribed fire complies with Federal and State air quality regulations.

**FM-4.** Each vegetation community is maintained within its natural range of variation in plant composition, structure, and function, and fuel loads are maintained below levels that are considered to be hazardous

**FM-8.** Use suitable tools for reducing hazardous fuels, including prescribed burning, wildland fire use, and mechanical methods.

**FM-10.** In areas not suitable for fire where fuel loading is high, BLM will use biological, mechanical, or chemical treatments and some prescribed fire to maintain non-hazardous levels of fuels and meet resource objectives.

**FM-12.** In areas suitable for fire where conditions allow, BLM will do the following:

- allow naturally ignited wildland fire, use prescribed fire and a combination of biological, mechanical, and chemical treatments
- to maintain nonhazardous levels of fuels,
- reduce the hazardous effects of unplanned wildland fires, and
- meet resource objectives.

**FM-16.** Firefighter and public safety are the first priority in every fire management activity. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources must be based on the following:

- values to be protected,
- human health and safety, and
- costs of protection (BLM 2001b).

### *1.3.2 Vegetation and Riparian Management*

**VM-1.** Maintain, restore, or enhance the diversity, distribution, and viability of populations of native plants, and maintain, restore, or enhance overall ecosystem health.

**VM-8.** Fuels reduction projects may include provisions for permitting firewood collection on a case-by-case basis.

## 1.4 Relationship to Statutes, Regulations, or other Plans

The proposal is also consistent with other Federal, State and local plans including, but not limited to, the following:

- *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, Ten-Year Comprehensive Strategy* was a policy developed in 2001 that placed emphasis on reducing risk to communities and the environment by managing wildland fire, hazardous fuels and ecosystem restoration and rehabilitation on both forests and rangelands. Three of the four goals outlined in this policy include: (1) Improve fire prevention and suppression; (2) Reduce hazardous fuels and (3) Restore fire adapted ecosystems.

- The Healthy Forests Initiative for Wildfire Prevention and Stronger Communities. The Healthy Forests Initiative implements core components of the Cohesive Strategy agreed to by Federal, State and local agencies as well as Tribal Governments and stakeholders. The purpose of the Cohesive Strategy is to ensure a coordinated effort to provide fire

protection for communities while improving the health of watersheds and vegetative communities.

The hazardous fuels reduction portion of the strategy states, "Assign the highest priority for hazardous fuels reduction to communities at risk, readily accessible municipal watersheds, threatened and endangered species habitat and other important local features where conditions favor uncharacteristically intense fires." (Protecting People and Sustaining Resources in Fire Adapted Ecosystems: A Cohesive Strategy, page 9).

The Hassayampa WUI Fire Defense System Project responds to the fuels reduction element of the Cohesive Strategy.

## 1.5 Scoping & Public Participation

The BLM Interdisciplinary Team internally scoped and developed this project. The team identified the supplemental authority elements and other resources to be addressed in this document, as outlined in Section 3.2.

## 1.6 Issues Identified

During the Interdisciplinary Team Kick-Off Meeting (July 18, 2014), special concerns and design features for this project were identified. Specific issues include the following:

- The area around the Highway 69 corridor is near the Black Canyon National Recreation Trail (BCNRT). Special Use Permits are given to touring companies to use the area. The BLM should ensure that notification is provided if the treatments will require temporary closures.
- Proposed critical habitat for Mexican garter snake, which was recently listed as Threatened under the Endangered Species Act, exists within the project area.
- Proposed critical habitat for the proposed threatened species yellow-billed cuckoo also exists in the project area.
- Potential impacts to migratory birds and their habitat.
- Potential impacts to Sonoran desert tortoises and their habitat.

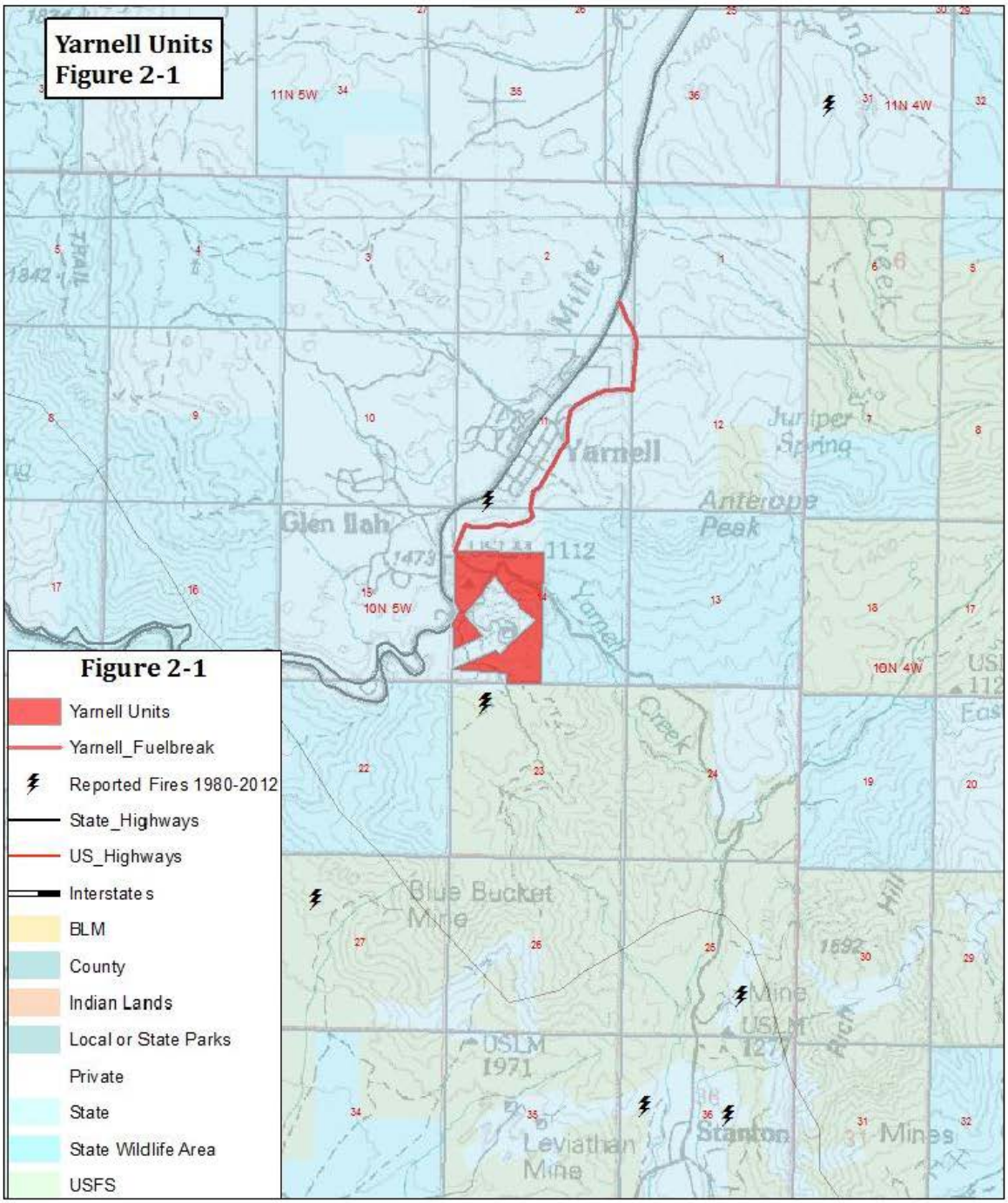
# 2. PROPOSED ACTION AND ALTERNATIVES

## 2.1 Alternative 1 - Proposed Action

The Bureau of Land Management's (BLM), Phoenix District, Hassayampa Field Office proposes to reduce hazardous fuels in the Wildland-Urban Interface on public lands administered by the BLM and private lands around the communities of Yarnell, Peeples Valley, Prescott, Dewey, Humboldt, Mayer, and Black Canyon City.

**Table 2-1. Summary of Treatment Units.**

| Treatment Unit | Proposed Actions | Acreage |
|---|---|---|
| Yarnell Units | Mechanical, chemical, biological, seeding, activity fuel disposal | 207 |
| Peeples Valley Unit | Mechanical, chemical, biological, seeding, activity fuel disposal | 35 |
| Prescott Units | Mechanical, chemical, biological, seeding, activity fuel disposal | 114 |
| Highway 69 Corridor Unit | Mechanical, chemical, biological, prescribed fire, seeding, activity fuel disposal | 21,631 |
| Black Canyon City Unit | Mechanical, biological, , seeding, activity fuel disposal | 97 |

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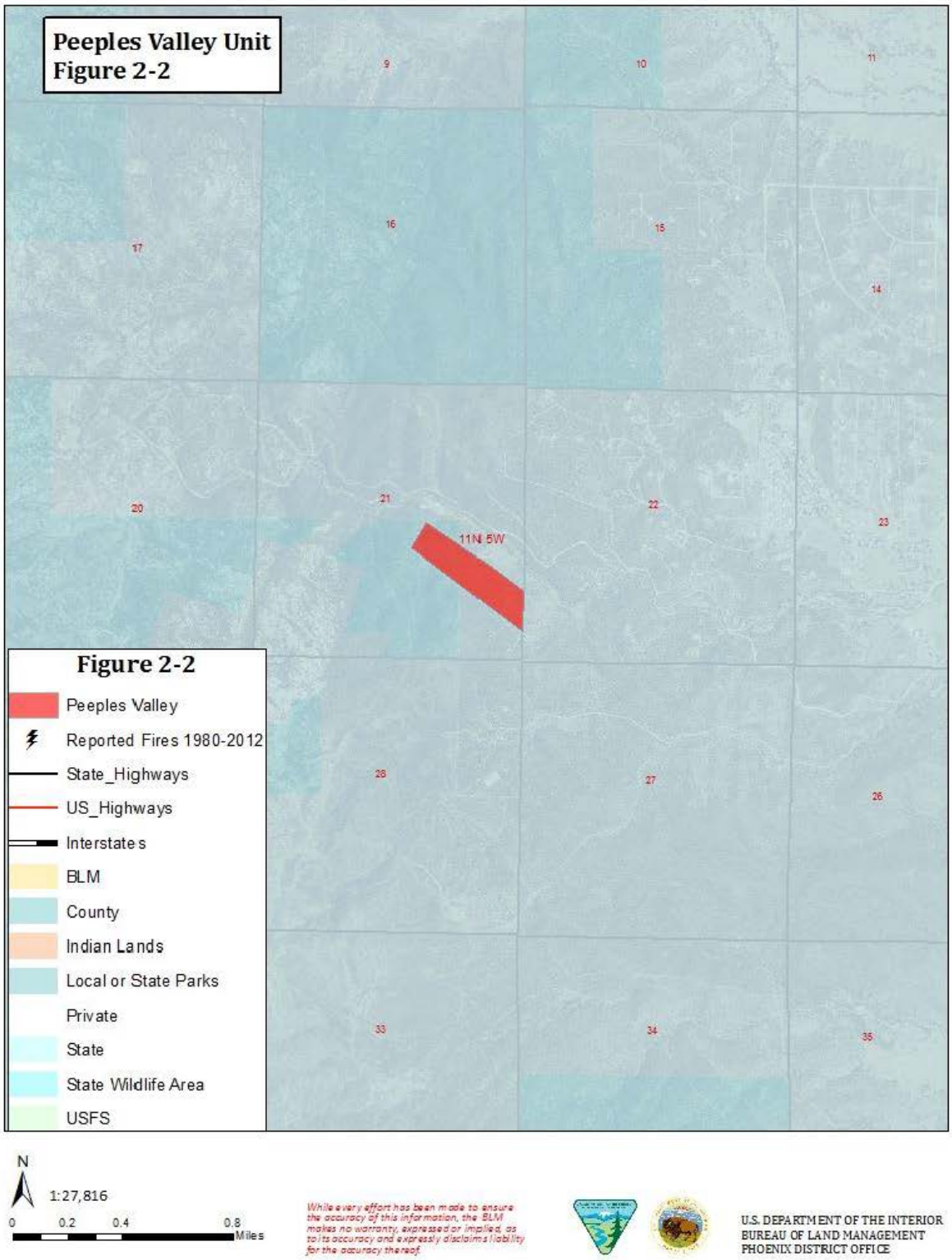
Peeples Valley Unit
Figure 2-2
9
10
11
16
15
17
14
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21
22
23
11N 5W
28
27
26
33
34
35
Figure 2-2
Peeples Valley
Reported Fires 1980-2012
State_Highways
US_Highways
Interstates
BLM
County
Indian Lands
Local or State Parks
Private
State
State Wildlife Area
USFS
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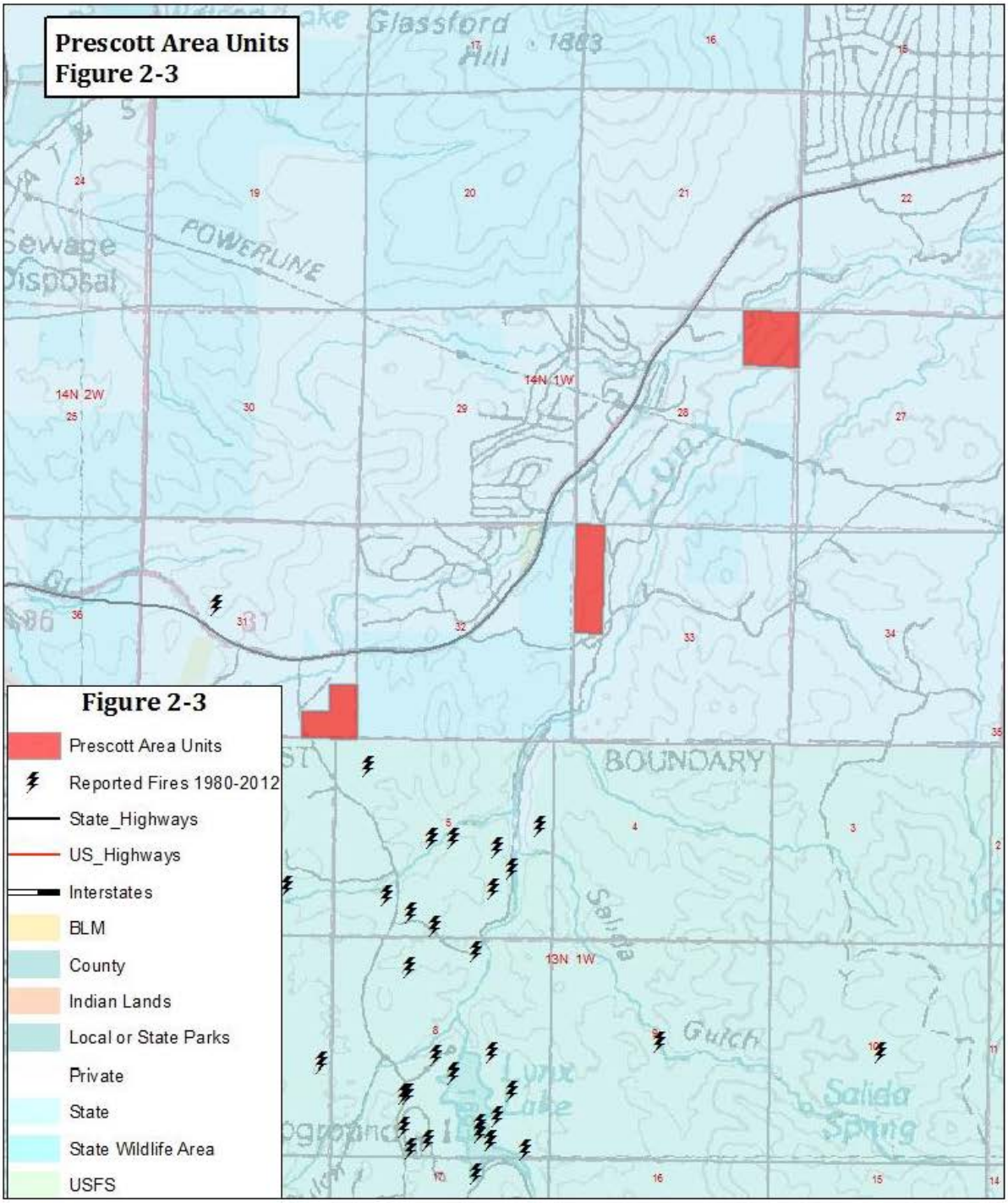


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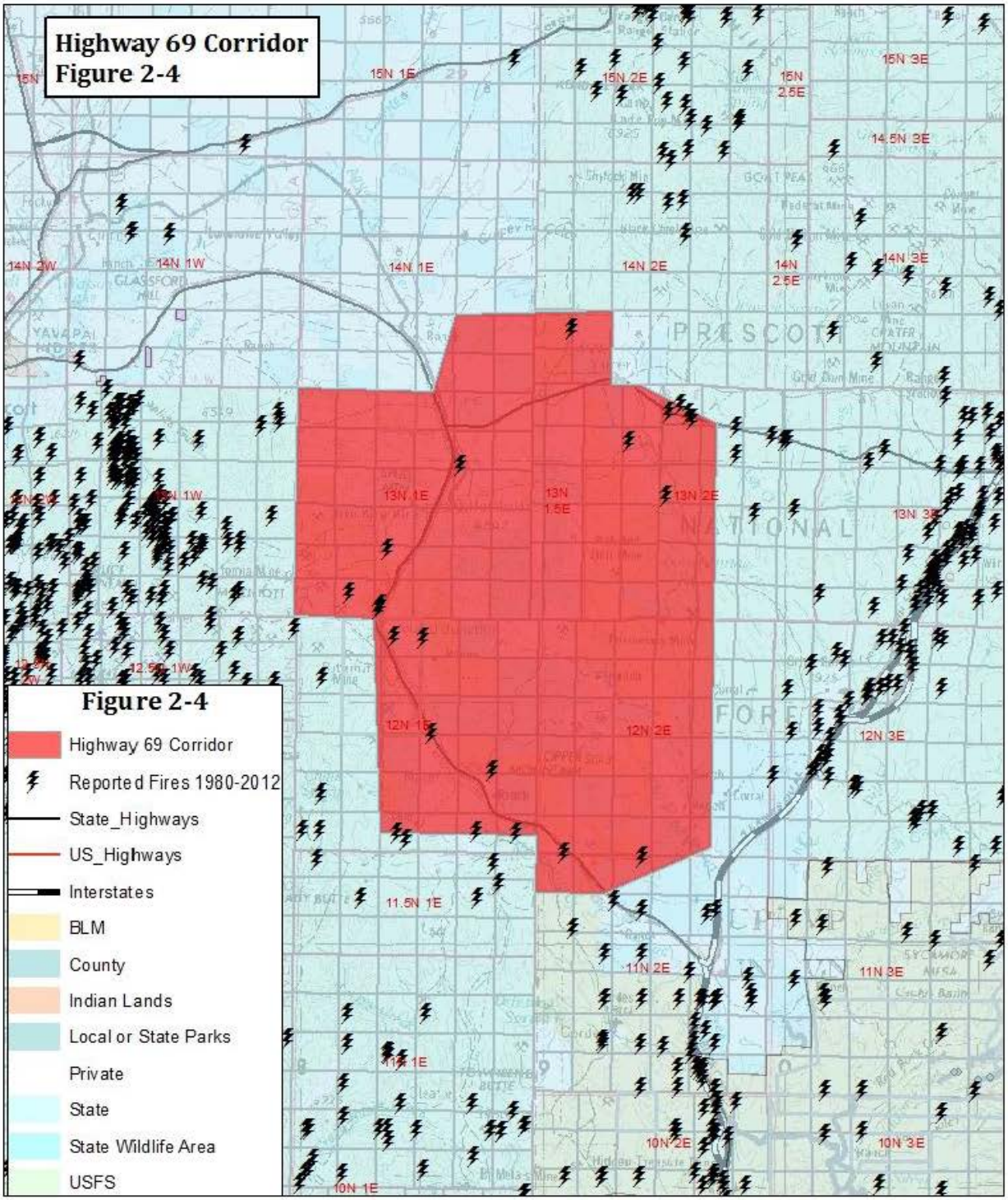


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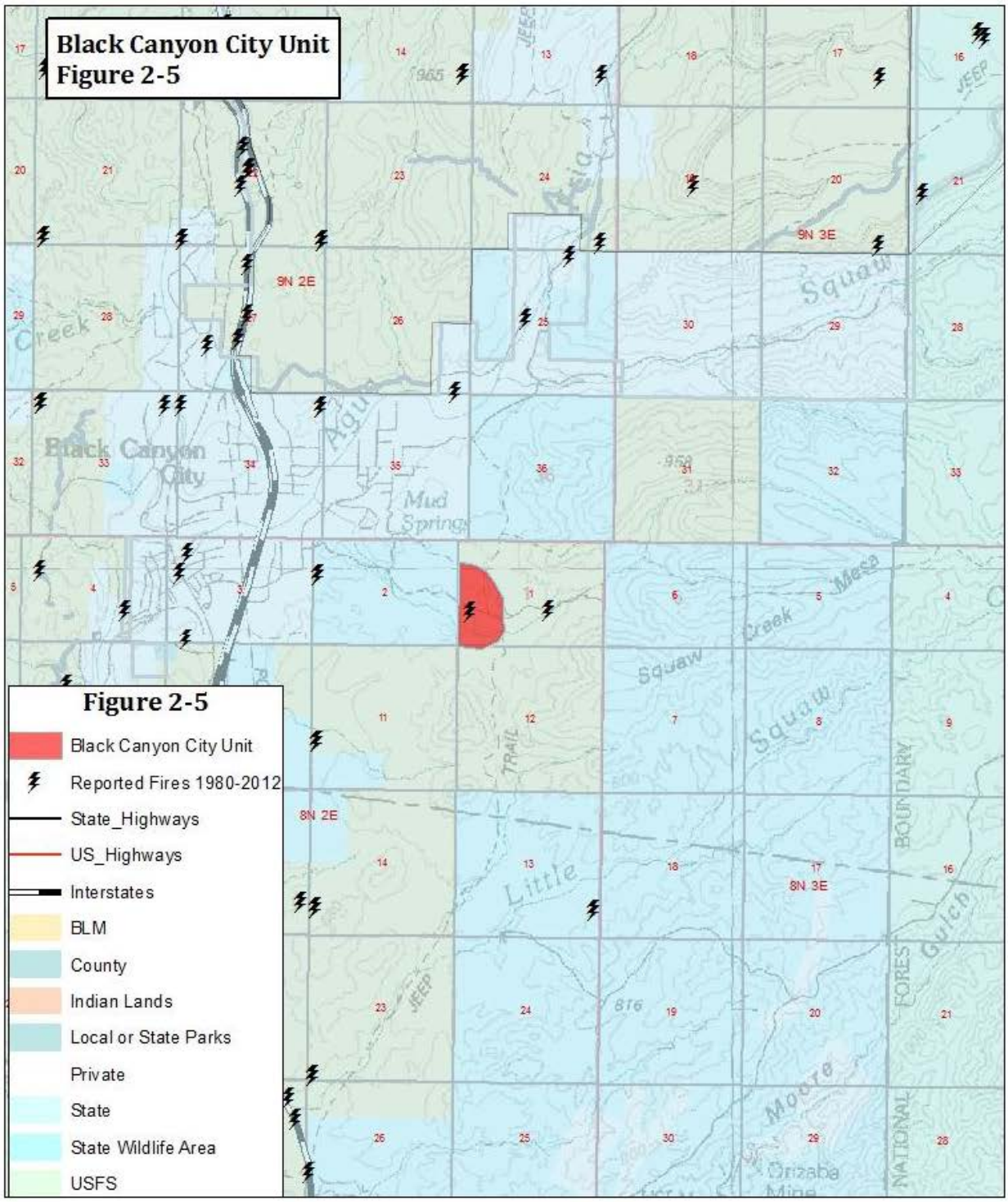


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### *2.1.1 DESIGN FEATURES COMMON TO ALL UNITS*

a. No new roads will be constructed

b. Best management practices and the following measures would be used to mitigate for noxious weeds and invasive plant species:

   **1.** Minimize ground disturbance by monitoring native grass release for at least one growing season following mowing in vegetation. Do not immediately seed. Native grass release may not warrant an additional seeding treatment.

   **2.** Broadcast seeding will be the preferred method for dispersing seed in order to keep the soil crust intact.

   **3.** In areas where invasive and noxious weeds are known to occur (i.e. along roads, private property, etc.), yearly monitoring for weeds will take place, and subsequent treatment may occur.

c. All fuels reduction/mastication units will be monitored for objective attainment for at least one growing season after initial treatment and prior to any type of seeding treatment. Results of monitoring will determine the need for seeding.

   **1.** Seed will be dispersed via broadcast application.

   **2.** Drill-seeding will occur only in areas determined to be appropriate by the authorized officer based on recommendations from resource specialists.

   **3.** Seeding time of year will be determined by the authorized officer based on recommendations from resource specialists.

d. Prescribed grazing, prescribed fire, chemicals, and seeding will be used in areas where invasive, noxious weeds have taken over to achieve type conversion back to natives. This treatment will potentially need to be repeated several years in a row to be successful.

e. Activity fuels generated from mechanical treatment will not be piled on roadways, railways, or under utility and powerlines.

f. Broadcast burning will not occur near explosive storage permits.

g. When conducting burning near powerlines, transmission lines, and power facilities, fuels should be pre-treated to avoid any damage to existing facilities.

h. A preferred seed mix will be developed that will contain species suited for the project area soil types and used as monitoring necessitates when and where feasible.

i. Depending on which treatment method(s) are selected (e.g., prescribed burning), livestock grazing may be temporarily deferred until herbaceous vegetation can be sustainably grazed. Typically 6 shallow rooted perennial grasses, 3 deep rooted perennial, or a combination of 6 native grasses and forbs per meter squared would allow grazing to continue as normal.

j. Out-year treatments or maintenance treatments may be conducted as monitoring indicates using methods and prescriptions as described in this EA.

k. All hazards in project area will be mapped using GPS and flagged prior to treatment implementation.

l. Sensitive cultural sites will be identified and avoided (may use an on-site monitor to mitigate public knowledge of site locations). Work and travel corridors will be identified as necessary.
m. Broadcast prescribed burning, pile burning and/or landings will not occur within known/identified archeological sites unless mitigated and/or cleared by archaeologist.
n. The treatments described in the proposed action will not occur within riparian areas.
o. To prevent potential disturbance to yellow-billed cuckoos, the treatments described in the proposed action will not occur within 0.5 miles of riparian areas between May 1 and September 30. To prevent potential disturbance to nesting yellow-billed cuckoos, pile burning or broadcast burning will not take place under conditions where dispersing smoke is likely to enter riparian habitat during the nesting season (May 1 – September 30).
p. To prevent take of migratory birds, the BLM will avoid conducting treatments in upland habitat during the migratory bird nesting season (March 1 – September 1). If treatments are planned during the migratory bird nesting season in upland habitat, the treatment area will be surveyed by a qualified biologist prior to treatment to determine if active nests and/or potential nesting substrate are present. The treatments will be designed to avoid active nests as well as potential nesting sites in vegetation that is too dense to adequately survey for active nests. The treatments will not take place within 0.5 miles of riparian habitat between May 1 and September 30. Disturbance (noise level, duration of treatments) will be minimized during treatments. When conducting pile burning operations, materials will be piled and burned in areas where nesting migratory birds will not be affected by the activity or dispersing smoke, and burning operations will not occur within 0.5 miles of riparian areas between May 1 and September 30. Local communities near the BCNRT will be notified 30 days prior to broadcast burns in the event that broadcast burning may impact the trail.
q. Fuels adjacent to developed recreation sites, restrooms, kiosk boards and existing signs along roads will be pre-treated prior to broadcast burns to avoid unintended damage to property.
r. Where necessary to prevent the creation of unauthorized routes, areas will be fenced along the Agua Fria River where cross-country travel is likely post-treatment.
s. The BCNRT will not be identified as a work or travel corridor since it is a non-motorized trail.
t. The BLM would coordinate with Special Recreation Permit (SRP) holders to ensure that adequate notice is given if temporary area closures are needed for project implementation.

### *2.1.2 TREATMENT METHODS*

#### 2.1.2.1 *Mechanical Treatment Methods:*

*Hand thinning*

This method would utilize chainsaws or other manually operated equipment, such as weed eaters, to thin overgrown grass, brush or trees.

*Mowing/mastication*

This method involves the manipulation of wildland fuels by use of a rotary mower towed by an agricultural tractor or a bull-hog. This equipment would be used to mow or masticate shrubs where the vegetative community and terrain make it feasible. Mowing would create fuel breaks to make an area less flammable and to provide protection of urban areas. Implementation of shrub mastication will not occur all the way down to the soil in order to minimize ground disturbance. The location of mowed areas may vary depending on fuel types, topography, and the presence of cultural resources.

#### 2.1.2.2 *Prescribed Fire Methods:*

*Broadcast Burning*

This method involves prescribed burning activity where fire is applied generally to most or all of an area within well-defined boundaries for reduction of fuel hazard, as a resource management treatment, or both. A prescribed fire burn plan will be developed to:

1) mitigate escape potential, adverse soil impacts, and smoke impacts to sensitive receptors from prescribed fire,
2) facilitate consumption and natural re-vegetation, and
3) provide for a mosaic burn pattern.

#### 2.1.2.3 *Biological Treatment Methods:*

*Prescribed Grazing*

This is a non-mechanized treatment method based on high intensity, low-frequency livestock grazing (HILF) and would be utilized to control fuel levels, thereby reducing and/or preventing the spread of wildfire (Strand and Launchbaugh 2013, Diamond et al. 2012, Pellant et al. 2010, Nader et al. 2007). Livestock would be herded or placed in fenced areas dominated by homogenous plant communities that would be identified for targeted grazing. These communities

would be limited to areas dominated by non-native invasive grasses and forbs (e.g. Red Brome *Bromus madritensis*) or invasive shrubs (Catclaw acacia *Senegalia greggii*). . Any targeted grazing implemented by the BLM would be intensely monitored and managed to leave sufficient residual plant material after grazing for wildlife food and thermal cover as well as watershed protection and function. Prescribed grazing may be conducted by current permittees or lessees under the terms and conditions of existing grazing permits or through the issuance of a free-use grazing permit (43 CFR§§ 4130.6-2, 4130.2(2)(h)).

#### 2.1.2.4 *Chemical Treatment Methods:*

This method involves treatment where BLM-approved herbicides as per the Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States(BLM 2007) would be applied to reduce the above-ground biomass of undesirable fuels from the existing plant communities. This method would serve to provide a break in the horizontal continuity of the existing vegetation. The herbicide would be applied to the same treatment areas as outlined in the Proposed Action. Periodic retreatment may be required.

#### 2.1.2.5 *Seeding:*

Seeding would only be conducted during optimal timeframes and with approved weed-free seed mixes. These mixes would be potentially used for rehabilitation and re-seeding of treated areas. These seed mixes may be modified in the future, as approved by the BLM.

**Cool season perennial grasses:**

| | |
|---|---|
| Bottlebrush squirreltail | *Elymus elymoides* |

**Warm season perennial grasses:**

| | |
|---|---|
| Sideoats grama | *Bouteloua curtipendula* |
| Cane beardgrass | Bothriochloa barbinodis |
| Curly mesquite | *Hilaria belangeri* |
| Vine mesquite | *Panicum obtusum* |
| Purple threeawn | *Aristida purpurea* |
| Red threeawn | *Aristida purpurea var. longiseta* |
| Cane beardgrass | *Bothriochloa barbinodis* |
| Black grama | *Bouteloua eriopoda* |
| Blue grama | *Bouteloua gracilis* |

| | |
|---|---|
| Hairy grama | *Bouteloua hirsuta* |
| Slender grama | *Bouteloua repens* |
| Red grama | Bouteloua trifida |
| **Annual grasses:** | |
| Sixweeks threeawn | *Aristida adscensionis* |
| Mucronrate sprangletop | *Leptochloa panicea spp. uninervia* |
| Rothrock grama | *Bouteloua rothrockii* |
| Witchgrass | *Panicum capillare* |
| Mexican panicgrass | *Panicum hirticaule* |
| Small fescue | *Vulpia microstachys* |
| Sixweeks fescue | *Vulpia octoflora* |
| Arizona signalgrass | *Urochloa arizonica* |
| Eastwood fescue | *Vulpia microstachys var. ciliata* |

| | |
|---|---|
| **Perennial Forbs:** | |
| Desert globemallow | *Sphaeralcea ambiqua* |
| Bluedicks | *Dichelostemma capitatum* |
| Largeflower onion | *Allium macropetalum* |
| Slimleaf bursage | *Ambrosia confertifolia* |
| Wright deervetch | *Lotus wrightii* |
| Parry penstemon | *Penstemon parryi* |
| Desert penstemon | *Penstemon pseudospectabilis* |
| Desert tobacco | *Nicotiana obustifolia* |
| Desert senna | *Senna covesii* |
| Desert-holly | Acourtia nana |
| Pink perezia | Acourtia wrightii |
| Trailling four-o’clock | Allionia incarnate |
| Narrowleaf silverbrush | Argythamnia lanceolata |
| Perennial rockcress | Arabis perennans |
| Desert marigold | Baileya multiradiata |
| Wavyleaf Indian paintbrush | Castilleja applegatei spp. martinii |
| Desert Mariposa lily | Calochortus kennedyi |
| Sego lily | Calochortus nuttallii |
| Desert trumpet buckwheat | Eriogonum inflatum |
| Desert larkspur | Delphinium parishii |

| | |
|---|---|
| **Annual Forbs:** | |
| Annual agoseris | Agoseris heterophylla |
| Western fiddleneck | Amsinckia tessellate |
| Astralagus | Astralagus spp. |

| | |
|---|---|
| Exserted Indian paintbrush | Castilleja exserta spp. exserta |
| Pitseed goosefoot | Chenopodium berlandieri |
| Cryptantha | Cryptantha spp. |
| American wild carrot | Daucus pusillus |
| Skeleton buckwheat | Eriogonum deflexum |
| Sorrel buckwheat | Eriogonum polycladon |
| Spreading fleabane | Erigeron divergens |
| Bull filaree | Erodium texanum |
| Mexican gold poppy | Eschscholzia californica spp. mexicana |
| Euphorbia | Euphorbia spp. |
| Foothill deervetch | Lotus humistratus |
| Lomatium | Lomatium spp. |
| Arizona lupine | Lupinus arizonicus |
| Fendler desert dandelion | Malacothrix fendleri |
| Spring evening primrose | Oenothera primiveris |
| Desert Indianwheat | Plantago ovata |
| Wolly Indianwheat | Plantago patagonica |

If necessary, seeded areas may be fenced temporarily using a BLM-approved design. Fences would be aligned to avoid cultural resources and would be removed once objectives for the treatment unit are achieved.

The BLM would establish monitoring sites within proposed treatment locations and would collect baseline vegetation data prior to the implementation of any treatments. This would eliminate the unnecessary seeding of areas that may be able to reestablish naturally. Follow-up monitoring after treatments have occurred would allow the BLM to evaluate seeding success. In addition, the BLM would conduct yearly monitoring of areas known to contain noxious weeds and non-native invasive species. When necessary, these areas would be treated using various treatment methods (i.e. prescribed grazing, chemical application, mowing). Monitoring would evaluate land health and would ensure the BLM conducts maintenance treatments when necessary.

2.1.2.6 *Activity Fuel Disposal Methods:*

*Biomass Utilization*

a. Pinyon-juniper and other woody species activity fuels larger than 3 inches in diameter may be made available to the public as fire wood or posts.
b. Activity fuel may be made available to the public as mulch (would need to be chipped).
c. Activity fuel may be made available for sale for commercial biomass utilization.

d. All biomass utilization would be collected using existing and/or designated routes. No new routes would be created.

*Pile Burn*

a. Burn piles should not exceed 10’ long x 10’ wide x 6’ high;
b. Burn piles will be piled with fine fuels and slash on the interior and larger fuels on the exterior;

Pile burning is preferred in the spring, fall, or winter. A burn plan will be prepared and a smoke permit will be obtained from the Arizona Department of Environmental Quality (ADEQ) prior to implementation of burning.

*Chipping*

This would include the use of a chipper to dispose of activity fuels generated from other methods. The chips would either be spread and left on-site, hauled off, or made available to the public.

### *2.1.3 Unit-Specific Treatment and Design Features*

2.1.3.1 *Yarnell Unit- Approximately 207 Total acres, 154 BLM acres*

a. Employ prescribed grazing to help reduce/reset the area and make more ground available for native plant growth.
b. Use mowing/mastication as needed.
c. Use approved chemicals to continue to reduce the regrowth of non-native species.
d. Seed the area with desired species.
e. Monitor and maintain project through follow-up treatments as needed.
f. If area is seeded, it will be rested from grazing and may be fenced if needed to facilitate rest.
g. A portion of this unit is located in category III Sonoran desert tortoise habitat. Treatment crews will look out for and avoid tortoise. Prior to operating or moving vehicles or equipment, treatment personnel will check underneath and around vehicles/equipment to ensure that tortoises are not in danger of being injured. If tortoises must be moved to avoid harming them, they will be moved according to the Arizona Game and Fish Guidelines for handling Sonoran desert tortoises encountered on development projects (Appendix A).

h. Pretreatment surveys will be conducted by a BLM biologist to determine if the area is currently occupied by desert tortoises prior to carrying out vegetation treatments. If the area is occupied by desert tortoises, BLM will implement the following conservation measures :
    a. Conduct vegetation treatments when tortoises are least active (typically November 1 to March 1).
    b. To the greatest extent possible, avoid desert tortoise burrows during herbicide treatments.
    c. Do not broadcast spray 2,4-D, glyphosate, or triclopyr; in areas adjacent to habitats occupied by Sonoran desert tortoises under conditions when spray drift onto the habitat is likely.
    d. If conducting manual spot applications of glyphosate or triclopyr to vegetation in upland habitats occupied by Sonoran desert tortoises, utilize the typical, rather than the maximum, application rate.
    e. If spraying imazapyr in or adjacent to upland habitats occupied by Sonoran desert tortoises, apply at the typical, rather than the maximum, application rate.

#### 2.1.3.2 *Peeples Valley Unit- Approximately 35 BLM acres*

a. Use mowing/mastication to reduce vegetation with minimal soil disturbance.
b. Use approved chemicals to eliminate non-native species.
c. Seed the area with desired species, as needed.
d. Monitor and maintain project for over all land health and effectiveness.
e. If area is seeded, it will be rested from grazing and may be fenced if needed to facilitate rest.
f. After unit has met standards, maintenance treatments may be authorized as monitoring indicates the need.
g. Use prescribed grazing, as needed.

#### 2.1.3.3 *Prescott Units: Approximately 114 BLM acres*

a. Use mowing/mastication to reduce vegetation with minimal soil disturbance.
b. Use approved chemicals to eliminate non-native species.
c. Seed the area with desired species, as needed.
d. Continue this regime until positive change is seen.
e. Monitor and maintain project for overall land health and effectiveness

f. If area is seeded, it will be rested from grazing and may be fenced if needed to facilitate rest.
g. After unit has met standards, maintenance treatments may be authorized as monitoring indicates the need
h. Use pile burning to dispose of activity fuel generated by thinning.
i. Use prescribed grazing, as needed.

#### 2.1.3.4 *Highway 69 Corridor Unit: Approximately 21,631 BLM acres*

a. Use mowing/mastication to reduce vegetation with minimal soil disturbance.
b. Use approved chemicals to eliminate non-native species.
c. Seed the area yearly with desired species, as needed.
d. Continue this regime until positive change is seen.
e. Monitor and maintain project for overall land health and effectiveness
f. If area is seeded, it will be rested from grazing and may be fenced if needed to facilitate rest.
g. After unit has met standards, maintenance treatments may be authorized as monitoring indicates the need.
h. Use prescribed fire to reduce fuel loadings through broadcast burning or pile burning
i. Use prescribed grazing, as needed.
j. Proposed critical habitat for the threatened northern Mexican garter snake is located along the Agua Fria River within this treatment unit. To avoid impacts that may adversely affect northern Mexican garter snakes or proposed critical habitat, do not carry out treatments within 0.5 miles of northern Mexican garter snake proposed critical habitat and follow the conservation measures below.
    a. When conducting herbicide treatments, do not spray during conditions under which there is a potential for off-site drift into proposed northern Mexican garter snake critical habitat.
    b. In watersheds containing northern Mexican garter snake critical habitat, do not apply triclopyr Butoxyethyl Ester (BEE) in upland habitats under conditions that would likely result in surface runoff.
k. Proposed critical habitat for the proposed threatened yellow-billed cuckoo is located along the Agua Fria River within this treatment unit. To avoid impacts that may adversely affect yellow-billed cuckoos or proposed critical habitat, do not carry out treatments within 0.5 miles of yellow-billed cuckoo proposed critical habitat and follow the conservation measures below.

a. When conducting herbicide treatments, do not spray during conditions under which there is a potential for off-site drift into yellow-billed cuckoo proposed critical habitat.
b. To prevent potential disturbance to nesting yellow-billed cuckoos do not conduct pile burning or broadcast burning under conditions where dispersing smoke is likely to enter proposed critical habitat during the nesting season (May 1 – September 30).

l. Big Bug Creek is a riparian area that may contain isolated populations of special status species including the longfin dace and lowland leopard frog and provide breeding habitat for migratory birds. Past proper functioning condition assessments have determined that the area is non-functional as a result of ground water loss, mining, and livestock activities. Consequently, treatments will not occur within riparian areas of Big Bug Creek.
m. Isolated springs occur within the Highway 69 Corridor unit. Treatments will not occur within a 300 foot buffer around springs to protect these sensitive areas.

2.1.3.5 *Black Canyon City Unit- Approximately 97 BLM acres*

b. Use mowing/mastication to reduce vegetation with minimal soil disturbance.
c. Use approved chemicals to eliminate non-native species.
d. Seed the area with desired species, as needed.
e. Monitor and maintain project for overall land health and effectiveness.
f. If area is seeded, it will be rested from grazing and may be fenced if needed to facilitate rest.
g. After unit has met standards, maintenance treatments may be authorized as monitoring indicates the need.
h. Use pile burning to dispose of activity fuels.
i. Use prescribed grazing, as needed.
j. This unit is located in category II Sonoran desert tortoise habitat. Treatment crews will look out for and avoid tortoises. Prior to operating or moving vehicles or equipment, treatment personnel will check underneath and around vehicles/equipment to insure that tortoises are not in danger of being injured. If tortoises must be moved to avoid harming them, they will be moved according to the Arizona Game and Fish Guidelines to handling Sonoran desert tortoises encountered on development projects (Appendix A).
k. Pretreatment surveys will be conducted by a BLM biologist to determine if the area is currently occupied by desert tortoises prior to carrying out vegetation treatments. If the area is occupied by desert tortoises BLM will implement the following conservation measures:
    a. Conduct vegetation treatments when tortoises are least active (typically November 1 to March 1).

b. To the greatest extent possible, avoid desert tortoise burrows during herbicide treatments.
c. Do not broadcast spray 2,4-D, glyphosate, or triclopyr; do not broadcast spray these herbicides in areas adjacent to habitats occupied by Sonoran desert tortoises under conditions when spray drift onto the habitat is likely.
d. If conducting manual spot applications of glyphosate or triclopyr to vegetation in upland habitats occupied by Sonoran desert tortoises, utilize the typical, rather than the maximum, application rate.
e. If spraying imazapyr in or adjacent to upland habitats occupied by Sonoran desert tortoises, apply at the typical, rather than the maximum, application rate.

## 2.2 Alternative 2 - No Action

Under the No Action Alternative, the BLM would not approve the Proposed Action or implement fuel reduction treatments in the identified project area. Other authorized uses within the proposed project areas would continue.

# 3. AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

This section describes the existing condition of the potentially impacted resources and how they would or might be affected by the proposed action and alternatives.

## 3.1 Definition of Terms

**According to 40 CFR 1508.8 (U.S. National Archives and Records Administration 2012):**

"'Effects' include:

(1) Direct effects, which are caused by the action and occur at the same time and place.

(2) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial."The environmental effects of the Proposed Action and No Action Alternative described in this EA are primarily derived through the analysis of the expected changes that implementation of each alternative would have on the existing conditions of the resources described in the below sections.

## 3.2 Cumulative Effects Study Area

The Cumulative Effects Study Area is defined by the treatment unit boundaries for all of the treatment units with the exception of the Highway 69 Corridor unit. The Highway 69 Corridor unit includes the treatment unit boundary and a 1 mile buffer around the unit.

## 3.3 Past, Present and Reasonable Foreseeable Future Actions

### *3.3.1 Past and Present Actions*

- Past wildfire activity
- Past fuels treatments
- Livestock Grazing

- Dispersed recreation (hunting, motorized and non-motorized use, etc.)
- Special Recreation Permits
- Existing authorizations (powerlines, roads, transfer station, etc.)
- Commercial and residential development on nearby private land

### *3.3.2 Reasonably Foreseeable Future Actions*

The past and present actions listed above are expected to continue. No other reasonably foreseeable future actions are known at this time.

## 3.4 Analysis of Resources

**Table 3-1**. Resources and rationale for detailed analysis

| **Resource** | **Not Present** | **Present, Not Affected** | **Present, May Be Affected** | **Rationale** |
|---|---|---|---|---|
| Vegetation | | | X | See Section 3.5 |
| Non-native Invasive and Noxious Species | | | X | See Section 3.6 |
| Cultural Resources | | | X | See Section 3.7 |
| Special Status Species | | | X | See Section 3.8 |
| Migratory Birds | | | X | See Section 3.9 |
| Fish and Wildlife | | | X | See Section 3.10 |
| Fire Management | | | X | See Section 3.11 |
| Air Quality | | | X | See section 3.12 |

| Resource | Not Present | Present, Not Affected | Present, May Be Affected | Rationale |
|---|---|---|---|---|
| Soils | | | X | See Section 3.13 |
| Rangeland Management | | | X | See Section 3.14 |
| Visual Resources | | X | | Treatments would be implemented to conform to the goals and objectives of the applicable VRM classes. |
| Threatened and Endangered Species | | X | | Design features of the proposed action have been included to avoid impacts to this resource. |
| Areas of Critical Environmental Concern | X | | | Resource is not present. |
| Environmental Justice | X | | | None of the alternatives would disproportionately impact any low income of minority populations as described in Executive Order 12898. |
| Farmlands (Prime and Unique) | X | | | Resource is not present. |
| Floodplains | X | | | Resource is not present. |
| Native American Religious Concerns | | X | | As required by the AIRFA (42 U.S.C. 1531) and the NHPA (16 U.S.C. 1531), local Native American tribes were notified of the Proposed Action during the coordination process of this project. The BLM HFO has received two responses that raised concerns that would be addressed at the time of implementation, if necessary. |
| Recreation | | X | | Design features of the proposed action have been included to avoid impacts to this |

| Resource | Not Present | Present, Not Affected | Present, May Be Affected | Rationale |
|---|---|---|---|---|
| | | | | resource. |
| Wastes (Hazardous and Solid) | X | | | This action is not anticipated to generate any hazardous or solid waste. |
| Water Quality (Surface and Ground) | | X | | Project implementation would not affect the quality and/or quantity of ground or surface water. |
| Wetlands and Riparian Zones | X | | | Resource is not present. |
| Wild and Scenic Rivers | X | | | Resource is not present. |
| Wilderness | X | | | Resource is not present. |

## 3.5 Vegetation

### *3.5.1 Affected Environment*

There are various types of plant communities found within the proposed project areas. These communities include: Upper Sonoran Desert Scrub, Semidesert Grassland, Montane Conifer Forest, Riparian, and Interior Chaparral **(**Brown 1994). These 5 vegetation communities give rise to a high diversity in plant species that vary by location. The nature of plant communities is often clearly delineated by climatic, geological, elevation and aspect gradients which in turn influences soil type and soil water holding capacity. For more information about vegetation communities found within the various project areas, refer to the Bradshaw-Harquahala Resource Management Plan (BLM 2010).

Each vegetation community varies in annual precipitation and temperature regimes, elevation, and historic fire regimes (Swetnam and Baisan 1996, Paysen et al. 2000). Wildfire in some of these vegetation communities was a normal occurrence with short return intervals that helped to define species composition, structure, and productivity (Brown 2000, Paysen et al. 2000). As such, many plants that make up these communities are adapted to withstand wildfire through a variety of anatomical or physiological mechanisms. Examples of fire adapted vegetation communities are Interior Chaparral and Montane Forest. On the other hand, some vegetation communities, wildfire may not be part of their normal ecology and many of the plant species are not fire adapted (Rogers and Stelle 1980). Lower Sonoran Desert Scrub and Mohave Desert

Scrub are examples of vegetation communities with long fire return intervals. Fire in these communities would probably be detrimental because plant succession would require decades to hundreds of years for the vegetation.

### *3.5.2 Proposed Action*

The Proposed Action would have a direct impact on existing vegetation communities in that hazardous fuel reduction would occur to decrease the probability of catastrophic wildfire from occurring (Paysen et al. 2000). Over the long-term, the Proposed Action would reduce hazardous fuels using management tools such as prescribed fire, mechanical, biological (including livestock grazing), and chemical treatments. Vegetation communities should return to their historic range of variability with regards to fuel load and type. Also, the natural occurrence of fuels and the historic fire regime reflective of a vegetation community should occur.

The direct effect on vegetation from hazardous fuels reduction by prescribed fire, mechanical, biological, and chemical tools would be primarily short-term and temporary and would be in the form of soil erosion, inadvertent damage to habitat, and potential damage to both targeted and non-targeted species. However, vegetation is resilient and recovery should be short term. Fuels reduction treatments would need to be re-administered every few years to maintain the normal range of variability. The removal of diseased, invasive, and overstocked plants would encourage the growth of healthy forest and rangeland vegetation. Under certain conditions, the re-seeding of desirable plant species may be necessary to inhibit weed establishment in areas where fuel reduction treatments have been implemented.

### *3.5.3 No Action Alternative*

This alternative would result in no new impacts to vegetation communities. All wildfires regardless of ignition source would be suppressed in accordance with the current land use plan and fire management plan. The primary impact would the continuation of periodic wildfires, includinglarge catastrophic wildfires (Brown 2000). It is anticipated that the number and acres burned will increase in future years following the trend in past years. Under the No-Action Alternative, hazardous fuels will continue to accumulate in the vegetation communities at rates respective to past years. The accumulation of hazardous fuels is a continuing concern especially in the WUI. The WUI will probably increase in importance as people continue to build houses near forests and rangelands.

Continuation of the current policies would lead to changes in the composition and structure of vegetation communities that eventually would lead to a loss of native plant diversity (Brown 2000). Fire dependent plant communities would continue to change as a result of continued fire suppression. Ecological conditions for vegetation would continue unchanged from the current state; however, this current state is quite different from the conditions under which these communities evolved.

Under the No-Action Alternative, it can be expected that ponderosa pine and pinyon-juniper forests would trend towards over-dense conditions, leading to forest health problems associated with insects, disease, drought, and fire. Grasslands would continue to be encroached upon by woody species such as juniper or other woody species. Interior chaparral would continue to be encroached upon by forest/woodlands species at higher elevations. Exotic weeds would continue to increase in all vegetation communities.

### *3.5.4 Cumulative Effects*

There may be cumulative effects to vegetation when this action is combined with the effects of continued livestock grazing, dispersed use of off-highway vehicles, and ground clearing related to development on public land and nearby private lands. Vegetation may be damaged from being eaten, crushed, or completely removed. Additionally, there may be re-vegetation efforts for construction areas on public land and some private land where required by development authorizations.

## 3.6 Non-native Invasive and Noxious Weeds

### *3.6.1 Affected Environment*

Vegetation communities in Arizona have been impacted by the introduction of invasive species or noxious weeds (Howery et al. 2009). The ability of noxious weeds to become established and dominate would be reduced under the Proposed Action. Presently these species have not been documented within the proposed project areas. Complete inventories of the surrounding areas have not been completed and the best available data is as follows: within Yavapai County, a number of invasive weeds have been identified. Among these weeds are several species of thistle, including bull, malta star, yellow star, scotch and musk, in addition to camelthorn, dalmation toadflax, diffuse, russian and spotted knapweed, halogeton, hoary cress, jointed goatgrass(Howery et al. 2009).

### *3.6.2 Proposed Action*

The risk of weed introduction would be reduced after management ignited fire with the re-establishment of perennial grasses, forbs, and shrubs creating an environment where noxious and invasive weeds would be less competitive. Proposed action design features would be implemented to reduce the potential spread of noxious and/or invasive weeds during fuels management treatments. As a result of pre-project planning and proper post-fire management of livestock grazing and recreational use the potential for noxious and invasive weeds establishment and spread could be reduced.

### *3.6.3 No Action Alternative*

In the short-term, the risks of invasive weed increase would be similar to what is naturally occurring in the propose project areas.

In the long-term the frequency of large, hot fires would continue to increase. Larger burned areas and fewer unburned islands within the burn would lead to longer recovery periods following the fire. Natural regeneration processes for species which do not re-sprout after a fire would take longer due to the size of the burned area. This would decrease the edge effect for airborne seed establishment of native vegetation and result in longer periods of vulnerability to noxious and invasive species. This would increase the potential for the spread of invasive weeds and the potential of noxious weeds into the burned areas over the long-term. Burned areas would result in new succulent growth as well as open up areas that have before been inaccessible to livestock and wildlife due to extensive vegetative growth.

### *3.6.4 Cumulative Effects*

There may be cumulative effects to noxious and invasive species when this action is taken in combination with the possibility of weed infestation and spread from seeds carried by livestock or recreationists and their vehicles. This action may provide additional opportunities to establish, although the design features included in the Proposed Action have been designed to minimize this impact.

## 3.7 Cultural Resources

### *3.7.1 Affected Environment*

The American Indian Religious Freedom Act of 1978 (AIRFA) and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) protect traditional cultural properties. The National Historic Preservation Act (NHPA) is legislation intended to preserve historical and archaeological sites in the United States. This act requires federal agencies to evaluate the effects of all federally funded or permitted projects on historic properties through a process known as "Section 106 Review." BLM compliance with Section 106 of the NHPA is principally accomplished through the State Protocol Agreement between the BLM and SHPO. This agreement establishes procedures undertaken by the BLM to evaluate cultural resources. Specifically, this agreement streamlines the Section 106 process by eliminating case-by-case consultation with SHPO on undertakings that culminate in no effect or no adverse effect determinations. A determination of adverse effects requires that BLM consult with SHPO per the regulations at 36 CFR 800 (BLM 2012e).

The BLM HFO has documented that approximately 84 cultural resource investigations have been completed in, or near, the project area. All of these previous surveys are considered adequate. Some inventories located within current project treatment units were linear in scope. The previous surveys documented in total do not completely cover the proposed treatment units. Therefore, in compliance with Section 106 of the NHPA, as amended, the BLM would conduct

an appropriate level of inventory in all treatment units prior to project implementation so that cultural resource sites could be recorded and avoided.

Previously conducted cultural resource inventories have identified 86 sites within the proposed treatment units, 16 of which are located on BLM lands. Site types recorded during these inventories included dispersed prehistoric and historic sites consisting primarily of roads, mines, modern hard rock materials sources, railroads, historic cemeteries, jeep trails, adits, shafts, power lines, wells, ranches, underground telephone cable, artifact scatters, old mining sites, and historic trails. Of these sites, four are considered eligible, one [AZ N: 14:20(ASM)] is determined eligible for the National Register, 16 sites are eligible for inclusion individually, seven are ineligible individually, ten sites had no data in AZSITE other than the site number, ten sites are not considered eligible and 44 sites have not been previously evaluated according to AZSITE.

### *3.7.2 Proposed Action*

The BLM would avoid all cultural resources identified in the project area, utilizing the standard avoidance procedures outlined in the Arizona State Protocol Agreement between the AZ BLM and AZ SHPO. Therefore, no significant, adverse impacts to cultural resources or their elements for inclusion on the National Register are anticipated under implementation. In the proposed action alternative, indirect, beneficial effects to cultural resources may be realized because of decreased hazardous fuels and the subsequent reduction in the number and severity of wildland fires.

By reducing surrounding combustibles and other vegetative matter without removing so much ground cover that the resources are easily seen, especially in cases where there is a nearby road or trail, the proposed action may help conceal sites and prevent any wildland fire from damaging the resource.

### *3.7.3 No Action Alternative*

Under the No Action Alternative, no ground-disturbing activities would take place. As a result, wildland fires may become more likely within the treatment units and cultural resources may be at an increased risk of damage from wildland fire. Wildland fire is generally more destructive to cultural resources than prescribed fire, since it includes both uncontrolled fire effects and the effects of fire suppression.

Currently, any archaeological and historic resources that may exist in the area are in danger of impacts from wildland fire including spalling of rock surfaces, resultant runoff and erosion of sites, increased visibility of sites, and increased access and potential for looting.

### *3.7.4 Cumulative Effects*

Under the proposed action no cumulative impacts to cultural resources are anticipated. Design features have been included to avoid damage to cultural resources.

## 3.8 Special Status Species

### *3.8.1 Affected Environment*

Special status species include species listed as threatened or endangered under the Endangered Species Act (ESA), species proposed to be listed under the ESA, and BLM sensitive species which include species that are candidates to be listed under the ESA. Design features of the proposed action largely avoid potential impacts to special status species and their habitats. Consequently, further discussions are limited to species that may be affected by the various alternatives.

Sonoran desert tortoises occupy upland areas in Sonoran desert scrub habitat. The distribution of desert tortoises is not uniform. Tortoises tend to occupy hillsides and ridges with outcrops of large boulders as well as areas with incised washes and caliche caves, but may be found in lower densities throughout Sonoran desert scrub vegetation type. Tortoises generally use natural and excavated cover sites between or under boulders and in caliche caves along washes wherever they occur. Their diet consists of annual forbs (30.1%), perennial forbs (18.3%), grasses (27.4%), woody plants (23.2%) and prickly pear fruit (1.1%) (Van Devender,et al. 2002). These forage species are available for Sonoran desert tortoise throughout the Complex. The treatment areas contain category II and category III Sonoran desert tortoise habitat. Category II habitat is defined as: 1) Habitat that may be essential to the maintenance of viable populations; 2) Habitat where most conflicts are resolvable; and 3) Habitat that contains medium to high densities of tortoises or low densities contiguous with medium or high densities. Category III habitat is defined as: 1) Habitat that is not considered essential to the maintenance of viable populations; 2) Habitat where most conflicts are not resolvable; and 3) Habitat that contains low to medium densities of tortoises not contiguous with medium or high densities.

### *3.8.2 Proposed Action*

***3.8.3 Under the proposed action, approximately 22,084 acres will be treated with various vegetation manipulation methods to remove hazardous fuels/vegetation. This action will reduce the quality of or eliminate 132 acres of Category II desert tortoise habitat and 20 acres of Category III habitat. This effect will be dependent upon time with the greatest impact immediately post treatment. Desert tortoise habitat will recover though time. However, as vegetation recolonizes/recovers from treatment, the likelihood of retreatment will increase. No Action Alternative***

The No Action Alternative would not allow BLM authorized vegetation manipulation actions to occur within the proposed project areas; thus, potential impacts to special status species or their habitat will not occur. 100 acres of Category II desert tortoise habitat and 20 acres of Category III habitat will remain in the current state.

### *3.8.4 Cumulative Effects*

There may be cumulative effects to Sonoran desert tortoises when this action is taken in combination with the additional pressures of vegetation removal from livestock grazing, displacement and disturbance from recreationists and their vehicles, and ground disturbance and noise from development on public land and nearby private lands.

## 3.9 Migratory Birds

### *3.9.1 Affected Environment*

All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), as well as the Neotropical Migratory Bird Conservation Act (16 USC Chapter 80). Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds requires the BLM and other federal agencies to work with the U.S. Fish and Wildlife Service (USFWS) to improve protection for migratory birds. Arizona Partners in Flight (APIF) has identified more than 500 bird species in Arizona (Latta et al. 1999). Of the more than 500 species, 238 species are considered neotropical migrants. Important habitat for migratory birds in the HFO includes riparian, desert scrub, and desert grassland habitat. Migratory birds that are likely to occur within and near the treatment areas include, but are not limited to, ash-throated flycatchers, Bell's vireos, black-chinned sparrows, Scott's orioles, Costa's Hummingbirds, Lucy's warblers, summer tanagers and western kingbirds.

### *3.9.2 Proposed Action*

The vegetation treatment activities described in the proposed action could inadvertently result in the destruction of active migratory bird nests, eggs or could potentially kill juvenile birds. Destruction of active nests, eggs or mortality to migratory birds is a violation of the Migratory Bird Treaty Act. During vegetation treatments, the presence of crews and equipment could disrupt activities, such as foraging and breeding. Smoke associated with pile burning and broadcast burning could cause nesting birds to leave their nests, which could reduce reproductive success. These potential impacts to nesting birds are unlikely to occur because the treatments will take place outside the migratory bird nesting season (March 1 – September 1). If it is not feasible to conduct treatments outside of the nesting season nest searches by a qualified biologist would be conducted prior to treatment to identify avoidance areas, thus reducing the risk of take of, or disturbance to, migratory birds.

The vegetation treatments would result in a reduction of nesting and foraging habitat for migratory birds in the treatment areas. The extent of impacts would depend on the amount and type of vegetation removed. Reducing fuel loading in the treatment areas would reduce the risk of high intensity wildfire.

### *3.9.3 No Action Alternative*

The No Action Alternative would not allow authorized BLM vegetation manipulations within potential habitat used in both foraging and breeding by migratory birds totaling 22,087 acres.

### *3.9.1 Cumulative Effects*

There may be cumulative effects to migratory birds when this action is taken in combination with the additional pressures of displacement and disturbance from recreationists and their vehicles and ground disturbance and noise from development on public land and nearby private lands.

## 3.10 Fish and Wildlife

### *3.10.1 Affected Environment*

Wildlife species that occur within and adjacent to the treatment areas vary depending on the vegetation, substrate type and topography. Wildlife species that can be found in and adjacent to the treatment areas include but are not limited to important game species such as pronghorn, mule deer, javelina, coyote, gray fox, bobcat. Many other species such as the striped skunks, kangaroo rats, wood rats, pocket mice, western diamondback rattlesnakes and various other snakes, lizards, amphibians, small mammals and birds. Fish species that can be found in the Agua Fria River include fathead minnow, common carp, mosquitofish, and green sunfish.

### *3.10.2 Proposed Action*

Displacement or mortality to individuals could occur during treatment operations. Vegetation treatments will result in temporary loss of cover, forage and nesting habitat for a variety of wildlife species. The effects of vegetation manipulation on wildlife depend on vegetation structure, production, and phenology of the community. Because these characteristics relate to seasonal cover and food requirements for particular animal species – and the predators that depend on them – and because these characteristics respond differently to different vegetation manipulations, effects on fish and wildlife from vegetation management would range from negative to positive, depending on the species affected and the type of treatment used. Fish species may benefit through the reduced risk of high intensity wildfire which could result in increased input of sediment into aquatic habitat. Wildlife species that utilize early successional vegetative communities would also be expected to benefit from the Proposed Action. These effects are expected throughout the 22,087 project area.

### *3.10.3 No Action Alternative*

The impacts mentioned in the proposed action would not occur. Fuel loading in the WUI areas would remain high, which would increase the risk of high intensity wildfire. High intensity wildfire could result in increased runoff and erosion and increased sediment input into aquatic habitat. 21,631 acres in the Highway 69 Corridor unit will remain untreated and higher levels of woody species will continue to persist on the landscape. Grassland dependent species such as

the pronghorn antelope will continue to experience higher rates of predation as a result of abundant predator hiding cover and be exposed to habitat barriers created by woody species encroachment. However, other species and their habitats will remain similar to existing conditions.

### *3.10.4 Cumulative Effects*

There may be cumulative effects to fish and wildlife when this action is taken in combination with the additional pressures of vegetation removal from livestock grazing, displacement and disturbance from recreationists and their vehicles, and ground disturbance and noise from development on public land and nearby private lands.

## 3.11 Fire Management

### *3.11.1 Affected Environment*

The proposed treatment units are located within Fire Management Unit (FMU) 3 (HFO Bradshaws 3,500' North) as designated in the Phoenix District Fire Management Plan (BLM 2013). This FMU is made up of brush and grass land vegetation within the Hassayampa Field Office. The southern boundary is the vegetation change from Sonoran Desert to brush and grassland at around 3,000 feet in elevation across the southern end of the Bradshaw Mountains; the western portion is between the Prescott National Forest and the Phoenix District/Colorado River District boundary. It also includes the Highway 69 corridor from I-17 toward Prescott bordered by the Prescott National Forest.

FMU 3 spans an immense area from central Arizona north to the Utah and New Mexico borders. Fire years are typically correlated with above normal precipitation in the spring, which occurs about every seven years. Historic fire regimes vary across the FMU due to the presence of different ecosystems. A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the possible influence of aboriginal fire use.

Chaparral as a general vegetation type evolved with fire as a natural component of the ecosystem and is maintained in a healthy state by regular burning. The chaparral in the Phoenix District is more open and has a mixture of upper Sonoran Desert vegetation. Natural fires in these areas were probably less common than typically occur in chaparral vegetation in general.

### *3.11.2 Proposed Action*

Fire behavior should be decreased as a result of reduced fuel loading and continuity. Future natural fires within the proposed project area should be less extensive and smaller in size. Smaller wildfires should be easier to manage, reducing the risk to multiple natural resources, private lands, private withholdings, physical structures associated with rights-of-way, and aesthetic values. Future fires should mimic natural severity. The danger of large, uncontrolled wildfires should be reduced under this alternative. Under the Proposed Action, implementation of the treatments should move the project area toward a more natural vegetative community with

manageable fuel loading (FRCC 1) by reducing fuel loading and continuity, and establishing more perennial grass and forb species which naturally occur within the ecological site potential. Studies have shown that fuels treatments conducted prior to a large, uncontrolled fire event reduce fire burn severity and extreme fire behavior. These treatments modify stand structure and extreme wildfire behavior. In a report written by the Apache-Sitgreaves National Forest in 2002 titled, "Rodeo-Chediski Fire Effects Report", studies showed the lessening of burn severity on treated areas prior to a wildfire burning through the area.

### *3.11.3 No Action Alternative*

Fuel conditions could continue to increase and accumulate beyond levels representative of the natural (historic) fire regime which could increase the burn intensity potential. The risk of a large, uncontrolled wildfire could remain much greater. If a wildfire does occur in the area, fuel loading and the associated fire intensity should be increased. The No Action Alternative should result in high fuel loading, continuity and fire intensity potential in the long-term.

### *3.11.4 Cumulative Effects*

Past actions, including wildfire and previous treatment of wildland urban interface projects, along with livestock, wildlife use, land actions, and recreation activities may have affected fire and hazardous fuels on areas outside the proposed project area. These activities have created varying ecological conditions. Implementing the Proposed Action, combined with past actions, could result in ecological conditions that meet site potential and mimic the natural disturbance regime. This would provide a mosaic of differing ecological conditions which would increase the vegetative communities' resiliency to future disturbances while reducing and minimizing cumulative effects associated with disturbances. The potential exists for future wildfire events and wildland fire use for resource benefits to occur, although it cannot be determined at this time how many could occur and acres that could be affected. With foreseeable wildfires, rehabilitation of these areas could also occur, although it cannot be determined at this time how many could occur and acres that could be affected.

## 3.12 Air Quality

### *3.12.1 Affected Environment*

The current condition of air quality in the planning area is good, relative to other areas of the nation. The proposed project is within the Phoenix airshed, however, none of the treatment units are within any of the non-attainment areas for O-zone, carbon monoxide, $PM_{10}$ or $PM_{2.5}$.

### *3.12.2 Proposed Action*

During project implementation, short-term consequences could occur in the form of fugitive dust and/or smoke if pile burning or broadcast burning occurs. However, once the active burning

concludes for the day or for project completion the air quality would return to its present condition.

### *3.12.3 No Action Alternative*

Under the No Action Alternative, no proposed WUI treatment activities would occur to reduce the potential for wildland fire. As a result, the potential for smoke impacts from wildfire events would remain due to continued hazardous fuel accumulation. As fuel loads increase over time, the risk of wildfire also increases. Impacts to air quality from wildfires depend on the amount of biomass material consumed and atmospheric conditions. High-intensity wildfires with heavy fuel loadings result in a high level of emissions.

### *3.12.4 Cumulative Effects*

Implementing the Proposed Action and continued occurrence of other land use activities could continue to have short term consequences to the air quality. The potential exists for future wildfire events and wildland fire use for resource benefits to occur, although it cannot be determined at this time how many could occur and acres that could be affected. With foreseeable wildfires, rehabilitation of these areas could also occur, although it cannot be determined at this time how this would affect the air quality.

## 3.13 Soils

### *3.13.1 Affected Environment*

The soils on BLM-administered lands within the project areas are diverse and associated with a variety of climates, vegetative cover, topography, and geology. The dominant soil orders in the proposed treatment areas are Aridisols, Alfisols, and Mollisols. The soils dominantly have a thermic or mesic soil temperature regime, an aridic or ustic soil moisture regime, and smectitic or mixed mineralogy and formed in alluvium. They are very shallow to very deep and are well drained and somewhat excessively drained. Torrertic Haplustolls (Ashcreek series) and Torrertic Haplustalfs (Cloverdale series) formed on alluvial fans. Ustic Haplargids (Eskiminzin series) formed on hills and mountains. Pachic Haplustolls (Lanque series) formed on fan terraces and stream terraces. Cumulic Haplustolls (Rafter series) formed on flood plains and alluvial fans (NRCS 2006).

### *3.13.2 Proposed Action*

Prescribed fires and mechanical fuel reduction treatments would directly impact soil by increasing erosion rates due to fireline construction or road building, especially on steeper slopes. Heavy equipment could increase soil compaction, slowing the re-establishment of vegetative cover. Chemical fuel reduction treatments may leave residues that can alter soil microbial populations or vegetative recovery, affecting the productivity of the soil and increasing the vulnerability to erosion. Care should be taken to minimize soil disturbance, and chemical residuals, and preserve some vegetative cover and root systems to stabilize the soil and speed

recovery. Over time, less mechanical and chemical fuels treatments would be needed to reduce fuel loads.

Prescribed fire can also impact soil properties and permeability as previously mentioned, especially if fires are allowed to reach higher temperatures. However, the frequency and intensity of the fires would decrease over time as fuel loads decrease, reducing some of the impacts on soil properties.

Soils in riparian areas are not generally considered fire-adapted, but tend to be less vulnerable to detrimental soil heating due to the inherently higher water content. However, vegetative buffer strips should be maintained along these sensitive riparian areas to decrease stream sedimentation. Furthermore, organic soil that becomes dry will burn deeper and at higher temperatures, destroying the organic reserves and soil structure. If prescribed burns in riparian areas are necessary, they should be conducted when the soil and vegetation reach higher moisture contents, which decrease the likelihood of excessive soil heating and are favorable for rapid recovery of vegetation. Mechanical or chemical fuel treatments are not generally considered feasible in riparian areas for logistical reasons and the close proximity to water.

Fire alters the microbial communities and nutrient cycling. Microbial populations can shift after fires or decline entirely for periods of time depending on the intensity of the fire. However, fire effects on soil microorganism communities are complex and not fully understood. Fire also effects nutrient cycling, primarily by increasing the pH in more acidic soils, which would affect nutrient availability to plants. However, arid and semi-arid soils, like those common in the project areas, are typically alkaline, and therefore pH is less likely to be affected (Clark, 2001). Fire does increase nitrogen available for plant growth by converting nitrogen previously bound in unavailable forms, such as organic matter or woody material, into ash and a more plant available form of nitrogen (ammonium). However total nitrogen decreases from losses due to erosion or volatilization. Over time, nutrient deficiencies, particularly nitrogen, may result (Caldwell et.al., 2002; Macadam, 1989). Sulfur and phosphorous are also more readily lost, but to a lesser extent. Information is conflicting on the impact of these changes in nutrient availability, and the degree of long-term nitrogen loss is largely dependent on the intensity and frequency of the fire.

### *3.13.3 No Action Alternative*

Suppression of all wildfires in accordance with the current BLM fire management plans would have no new impact on soils. Existing impacts in fire-affected areas include greater susceptibility to accelerated soil erosion and sedimentation due to fire suppression activities and the loss of vegetative cover. The severity of the erosion is dependent on soil texture, slope, vegetative cover return intervals, and the precipitation intensity after the soil is disturbed. At the same time, the absence of fire can lead to greater fuel loads that could increase the frequency and intensity of fires in the long-term. As the intensity of the fire increases, the severity and duration of impacts on soils also generally increases.

Fire affects the physical, chemical, and microbial properties of soil. Catastrophic, high intensity fires have the most severe and long-lasting negative impact on soils. Higher temperature fires occur where thick, dry litter layers accumulate, heating soils to a greater depth (up to 4 inches) and a higher surface temperature (approximately 750°F or higher) compared to lower intensity fires (less than 1 inch and 250°F or lower). Above ground vegetative cover and organic matter, and below ground root systems provide structure and stability for the soil. Intense fires remove organic matter and vegetative cover more completely and deeply, leaving soil more susceptible to large-scale, accelerated erosion.

Soil heating also reduces soil organic matter and can cause shifts in microbial populations that affect nutrient cycling. Organic matter helps regulate soil moisture, the carbon/nitrogen ratio, microbial populations, and maintains soil structure, porosity and cation exchange capacity. Although many soils on BLM administered land in Arizona are low in organic matter, even small amounts contribute to these important soil properties.

One of the more severe effects of fire on soils is the formation of water-repellent layers through heating of organic compounds. This phenomenon, known as hydrophobicity, most commonly occurs on dry, coarse textured (sandy) soils that support shrub vegetation communities, such as chaparral. Hydrophobicity is most severe in soils heated to intermediate temperature (approximately 350 to 550°F). The formation of water-repellent layers can dramatically increase soil erosion, directly by inhibiting moisture infiltration, and indirectly by inhibiting vegetative recovery. Higher intensity fires can also increase impermeability in the limited areas with soils containing higher clay content.

Fire suppression is preferred on BLM administered lands with soils supporting non-fire adapted vegetation. These non-fire adapted areas are generally characterized by soils that are low in nutrients, organic matter and water holding capacity, and associated with arid or semi-arid environments. These characteristics would indicate slow fire return intervals, which would prolong the exposure of the soil surface to accelerated erosion from wind or precipitation. Soils on steeper slopes are especially vulnerable.

### *3.13.4 Cumulative Effects*

The occurrence of catastrophic wildfires should decrease over time as fuel loads decline. Reducing severe wildfires can protect soils from long-term damage and degradation of the soil properties, fertility and structure. Improving the long-term stability of the soils also improves the viability of the native fire-adapted vegetative communities the soil supports. Fire-adapted areas are less likely to be affected by repeated cycles of nutrient losses, and frequent, low-temperature fires have fewer, and shorter-lived effects on soils (McNabb, et al., 1990). Additionally, recent studies have shown erosion and sedimentation is up to 10 times lower following prescribed fires compared to high intensity wildfires (Wohlegmuth et.al. 1999).

## 3.14 Rangeland Management

### *3.14.1 Affected Environment*

There are 15 livestock grazing allotments that fall within the various proposed project areas. These allotments all vary in size, dominant vegetation, and Animal Unit Months (AUMs). Grazing authorizations for these allotments is typically from March 1 to February 28 on a yearly basis.

**Table 3-2. Allotments located within proposed treatment units with associated acres and AUMs.**

| Allotment Name | Allotment Acres* | BLM Authorized AUMs | Proposed Treatment Acres Within Allotment on BLM Administered Lands. |
|---|---|---|---|
| Texas Gulch | 928 | 48 | 270 |
| Dewey | 5238 | 180 | 900 |
| Osborne Spring Wash | 911 | 60 | 342 |
| Green Gulch | 109 | 12 | 92 |
| Humboldt | 646 | 24 | 109 |
| Chaparral Gulch | 4440 | 408 | 2003 |
| Poland Junction | 6117 | 276 | 1549 |
| Hackberry Mine | 565 | 12 | 231 |
| Hackberry Gulch | 1711 | 60 | 359 |
| U Cross | 19447 | 1667 | 9992 |
| Copper Mountain | 4365 | 216 | 1304 |
| Yarber Wash | 3608 | 156 | 759 |
| Mayer | 2727 | 264 | 1019 |
| Big Bug Creek | 4749 | 108 | 349 |
| Congress | 44038 | 3242 | 154 |
| • Acreage includes Federal, State, and Private Lands. | | | |

### *3.14.2 Proposed Action*

In the short-term, there would be minimal impacts to the authorized livestock grazing in the 15 allotments within the proposed treatment units. For most of the affected allotments, the size of

the treatment units within the respective grazing allotments is small enough to not warrant a change from presently authorized livestock grazing. However, depending on which treatment method(s) are selected (e.g., prescribed burning), livestock grazing may be impacted, which may result in livestock grazing being deferred until herbaceous vegetation can be sustainably grazed. Typically 6 shallow rooted perennial grasses, 3 deep rooted perennial, or a combination of 6 native grasses and forbs per meter squared would allow grazing to continue as normal. This typically takes one to two growing seasons to achieve. Areas that are broadcast burned and/or reseeded may require temporary fencing to exclude livestock from grazing herbaceous plants that have not developed the necessary root systems to be sustainably grazed.

In the long term, it is anticipated that an increase in available forage as a result of the treatments would change the current utilization patterns. Livestock presently do not use many areas due to vegetative overgrowth and decadence and unavailability of existing forage. The proposed treatments would likely cause an increase of new herbaceous vegetative growth that would become available for livestock use. The treatment would also likely assist in achieving Arizona Rangeland Health Standards and Guidelines Standard 1 (Upland Sites - Upland Soils exhibit infiltration, permeability and erosion rates that are appropriate to soil type, climate and landform.) and Standard 3 (Desired Resource Condition -Productive and diverse upland and riparian-wetland communities of native species exist and are maintained).

### *3.14.3 No Action Alternative*

In the short-term, there would be no impacts to the authorized domestic livestock grazing of the 15 allotments within the proposed project area. Livestock grazing would continue to be authorized at the current levels, and the permittees/lessees would not have permitted cattle numbers changed.

In the long-term, authorized livestock grazing could be decreased from current levels as more forage within the allotments becomes unavailable due to decadence and unavailability to livestock. This would likely apply more pressure to areas with forage availability, increasing utilization levels within these areas. Higher utilization levels would have to be addressed at the time of the grazing lease renewal through the Arizona Rangeland Health Standards and Guidelines.

# 4. PARTIES CONSULTED

Permittees (Livestock grazing, SRPs)
Ak-Chin Indian Community
Fort McDowell Yavapai Nation
Hopi Tribe
Hualapai Tribe
Pueblo of Zuni
Salt River Pima-Maricopa Indian Community
Yavapai-Apache Nation
Yavapai-Prescott Tribe
Western Watershed Project
Center for Biological Diversity
Arizona Cattlemen's Association
U.S. Fish and Wildlife Service
Nature's Feel
Arizona Off-highway Vehicle Coalition
Arizona Wilderness Coalition
Bumblebee Ranch
AZ Game and Fish
Prescott National Forest
Yavapai County
City of Prescott
Arizona State Forestry

# 5. LIST OF PREPARERS

Joshua Tibbetts – Fire Management Specialist

Casey Addy – Natural Resource Specialist

Mary Skordinsky – Outdoor Recreation Planner

Paul Sitzmann – Wildlife Biologist

Codey Carter – Wildlife Biologist

Christopher McLaughlin – Archaeologist

Thomas Bickauskas – Outdoor Recreation Planner

Hillary Conner – Realty Specialist

Gloria Tibbetts – Planning and Environmental Coordinator

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# Appendix A

GUIDELINES FOR HANDLING SONORAN DESERT TORTOISES
ENCOUNTERED ON DEVELOPMENT PROJECTS
Arizona Game and Fish Department
Revised October 23, 2007

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

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

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

Please keep in mind the following points:

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