

Four Forest Restoration Initiative, Rim Country EIS

Lands, Lands Special Uses, and Minerals Report

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for:

4FRI Rim Country EIS

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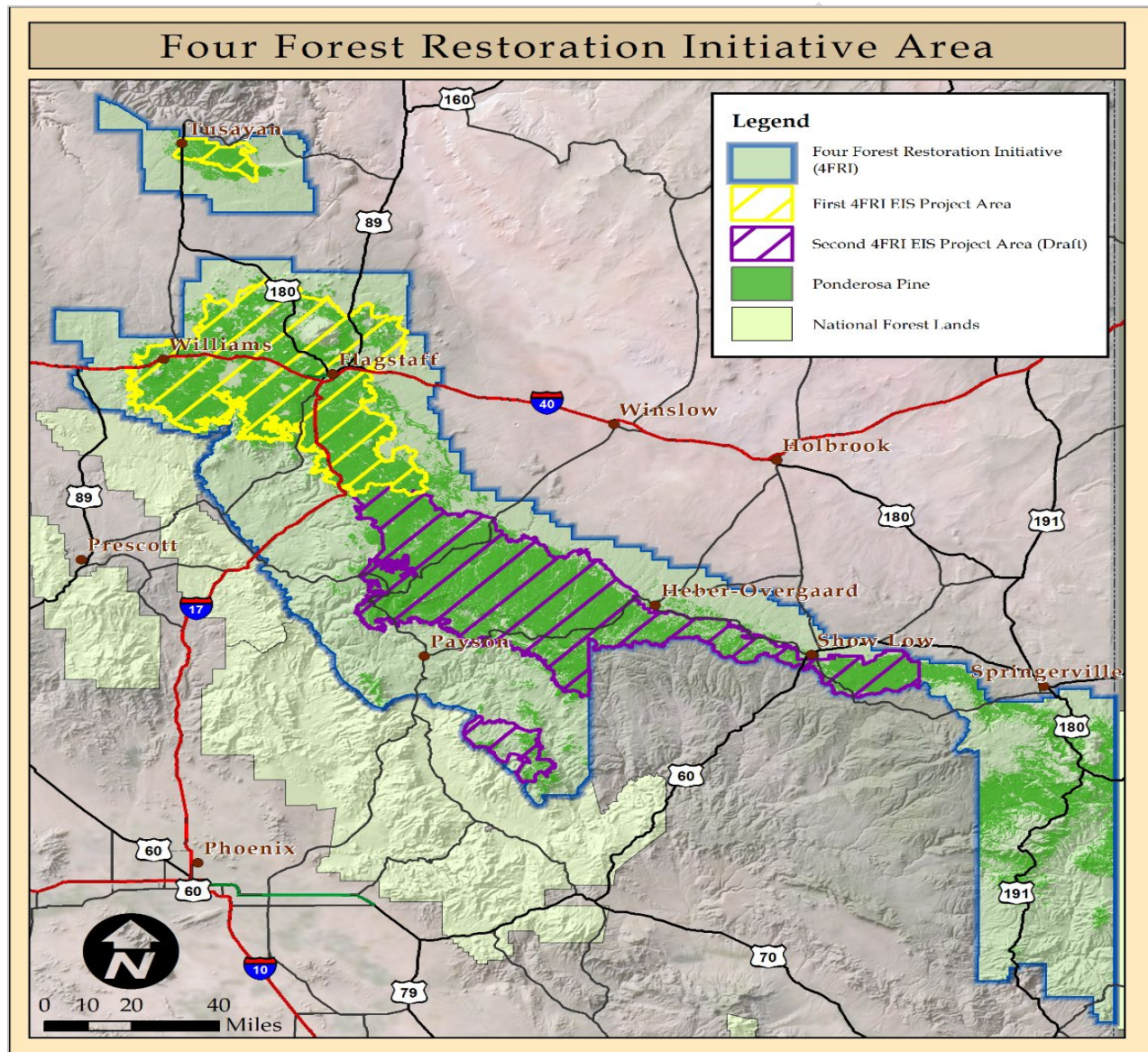
Table of Contents

Introduction.....	2
Relevant Law, Regulation, and Policy.....	4
Forest Plan Direction	6
Lands.....	6
Lands Special Uses	8
Minerals.....	9
Affected Environment.....	10
Lands	10
Lands Special Uses	11
Minerals	12
Issues/Indicators/Analysis Topics.....	14
Summary of Alternatives	16
Alternative 1 (No Action)	16
Alternative 2 (Modified Proposed Action)	16
Alternative 3 (Focused Alternative)	17
Environmental Consequences	20
Cumulative Effects Analysis	24
Irreversible and Irretrievable Commitments of Resources.....	25
Unavoidable Adverse Effects.....	25
Short-term Uses and Long-term Productivity	26
References Cited	26
Specialist Information	27

Introduction

The Rim Country Project is part of the Four Forest Restoration Initiative (4FRI). 4FRI is a planning effort designed to restore ponderosa pine forest resiliency and function across four national forests in Arizona: the Coconino, Kaibab, Apache-Sitgreaves, and Tonto National Forests (Figure 1). The Record of Decision for the first 4FRI environmental impact statement (EIS) for the northern portion of the Coconino National Forest (NF) and the Kaibab NF was signed in 2015.

Figure 1. Four Forest Restoration Initiative



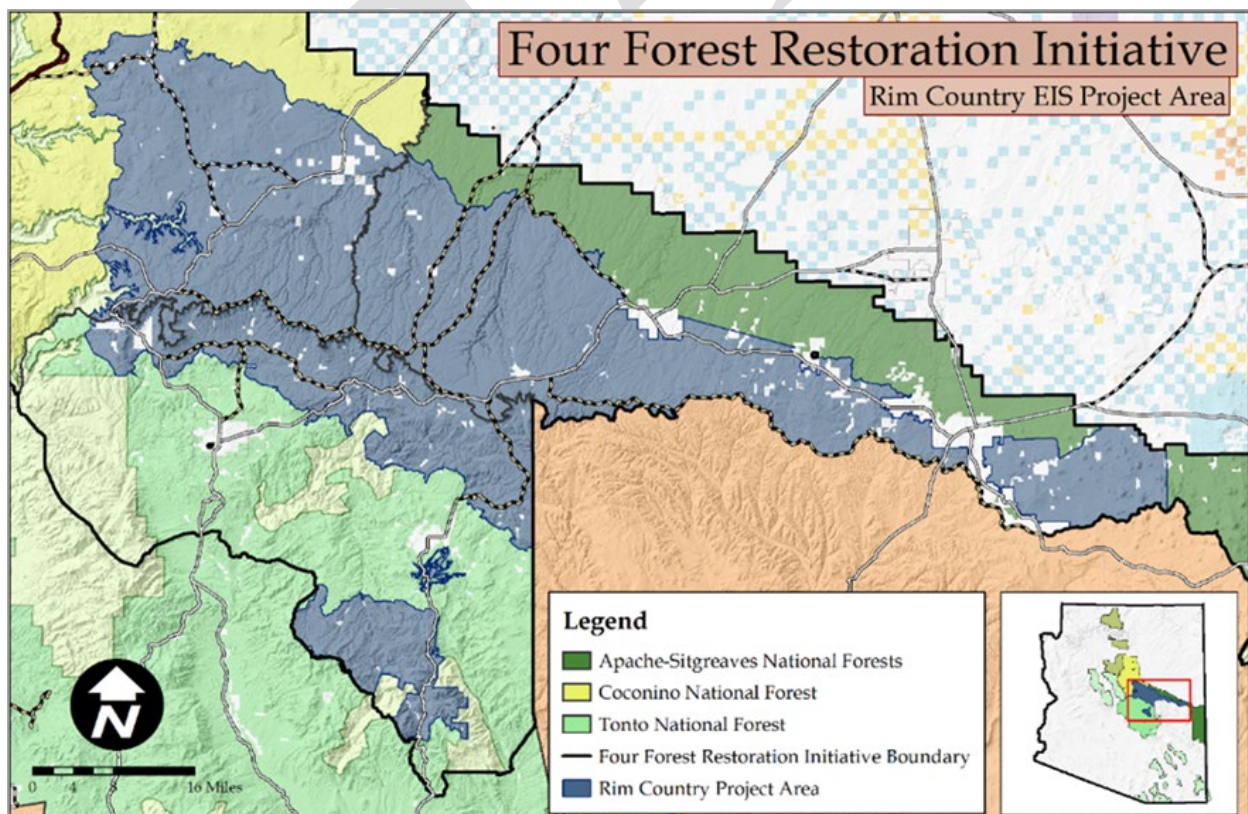
The Rim Country EIS continues these efforts by analyzing approximately 1.2 million acres on the Coconino NF, the Apache-Sitgreaves NF, and the Tonto NF (Figure 2).

The purpose of this project is to restore the ponderosa pine ecosystem to the conditions that existed prior to decades of fire suppression. Improving ecosystem structure and function results in increased ecosystem resiliency, which increases the ability of the ecosystem to survive natural disturbances such as fire, insects, disease, and climate change. The purpose of this project is to:

- Increase forest resiliency and sustainability
- Reduce risk of undesirable fire effects
- Improve terrestrial and aquatic species habitat
- Improve the condition and function of streams and springs
- Restore woody riparian vegetation
- Preserve cultural resources
- Support sustainable forest products industries.

To meet the purpose and need for action, the Apache-Sitgreaves, Coconino, and Tonto National Forests are proposing a suite of restoration activities on approximately 961,900 acres over a period of 10 years or when activities can be funded or completed. The area affected by the proposal includes approximately 540,020 acres on the Black Mesa and Lakeside Ranger Districts of the Apache-Sitgreaves NF, 398,880 acres on the Mogollon Rim and Red Rock Ranger Districts of the Coconino NF, and 299,710 acres on the Payson and Pleasant Valley Ranger Districts of the Tonto NF.

Figure 2. Rim Country Project Area



Relevant Law, Regulation, and Policy

Act of 1866, General Mining Law. This act authorizes rights-of-way across public lands for ditches and roads.

The Act of March 4, 1915, as amended July 28, 1956, (16 U.S.C. 497). This act authorizes term permits for structures or facilities on National Forest System land, and sets maximum limits of 80 acres and 30 years.

The Act of November 16, 1973, (30 U.S.C. 185). This act, amending Section 28 of the 1920 Mineral Leasing Act, authorizes the Forest Service to issue authorizations for oil and gas pipelines and related facilities

Alaska National Interest Lands Conservation Act, 1980 provides direction for providing access to non-federally owned land within the boundaries of the Forest.

An Act to Repeal Timber-Culture Laws, 1891 authorizes ditch easements across public lands and Forest Reserves.

Archaeological Resources Protection Act of 1979 provides the authority for archeological investigations and research permits.

Bankhead-Jones Farm Tenant Act of 1937, Section 31-33 authorizes most rights-of-way, except those on National Grasslands.

Colorado Ditch Act of 1986 (FLPMA amendment) resolves title claims for certain water uses and provides authority for easements for water conveyances.

Energy Policy Act of 2005 directed the Secretaries of Agriculture, Commerce, Defense, Energy, and the Interior to designate energy transport corridors for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities on Federal lands in portions of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Executive Order 11990 (Wetlands) and Executive Order 11988 (Floodplains)

Federal Land Policy and Management Act of 1976 updated authority for management of National Forest lands, provided general authority for use and occupancy of Forest lands, required fair market value for uses on the Forest, and repealed sections of many previous acts.

Forest Service Handbook 2709.11 Special Uses Management

Forest Service Manual 2700 Special Uses Management

Forest Service Facilities Realignment Act of 2005 (119 Stat 559-563; 16 U.S.C. 580d, as amended).

Highway Act of August 27, 1958, (23 U.S.C. 317), supplemented by the Act of October 15, 1966 (49 U.S.C. 1651) This act authorizes the Federal Highway Administration to grant

easements to States for highways that are part of the Federal-aid system or that are constructed under the provision of Chapter 2 of the Highway Act.

Land and Water Conservation Fund Act of September 3, 1964

Mineral Leasing Act of 1920, as amended on November 16, 1973, (30 U.S.C. 185(1)) authorizes the issuance of permits and easements for oil and gas pipelines. It requires annual payments in advance which represent fair market rental value and provides for reimbursement to the Government for administrative and other costs incurred in monitoring, construction (including costs for preparing required environmental analysis and documentation), operation, maintenance, and termination of oil and gas pipelines.

National Forest Roads & Trails Act 1964 authorizes construction and/or use of roads and trails by public road agencies and also landowners who join the Forest Service in operating mutually beneficial road systems.

Oil and Gas Pipeline amendment to the Mineral Leasing Act, Section 28 authorizes oil and gas pipelines.

Organic Act of 1897 provides for rules to regulate occupancy and use of the Forest Reserves.

Occupancy Permits Act (March 4, 1915) authorizes use and occupancy of National Forest land for recreation purposes including resorts and recreation residences.

Preservation of American Antiquities Act of June 8, 1906 provides authority for cultural resource survey permits, including site disturbance, excavation and collection.

Small Tracts Act of January 12, 1983 (96 Stat. 2535; 16 U.S.C. 521c-i).

Telecommunications Act of 1996 (Public Law 104-104) provides rules for competition and reduced regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications. The goal of this new law is to let anyone enter any communications business -- to let any communications business compete in any market against any other.

Term Permit Act of March 4, 1915, amended July 28, 1956 authorizes recreation residences, hotels, resorts and other industrial and commercial public service facilities.

Title 36, Code of Federal Regulations, part 254, subpart A (36 CFR part 254, subpart A).

National Forest Townsite Act of July 31, 1958 (72 Stat. 483; 7 U.S.C. 1012a; 16 U.S.C. 478a) as amended by Section 213 of the Federal Land Policy and Management Act of 1976 (90 Stat. 2760).

Water Conveyance Act of 1986 amended FLMPA to authorize permanent easements for agricultural water systems.

Forest Plan Direction

Each forest has a Land and Resource Management Plan (Forest Plan), which provides direction for managing the forest's ecosystems, recreation, and other natural and cultural resources. This section contains the relevant direction for Lands, Lands Special Uses, and Minerals from each of the forest plans (Apache-Sitgreaves, Coconino, and Tonto). Only the direction applicable to this project is cited.

Lands

Apache-Sitgreaves

Objectives for Lands

- Annually, survey and post on average 2 to 5 miles of unposted NFS boundary.
- Annually, maintain on average 2 to 5 miles of property boundary posting and corner monuments.
- Annually, resolve an average of three existing trespass cases.

Management approach for lands

Survey and proper posting of boundaries between NFS lands and other lands is a key objective. Bureau of Land Management (BLM) resurveys are requested where section corners have not been brass capped, especially in areas of complex land patterns, where development is taking place, or where affected by landscape scale disturbance.

Community-Forest Intermix

The Community-Forest Intermix Management Area consists of National Forest System (NFS) lands that are within one-half mile of communities-at-risk. Due to the threat of fire moving into or from developed areas, more intensive treatments (including regular maintenance) may be needed to reduce the risk of uncharacteristic wildfire and restore fire-adapted ecosystems. This management area may act as a zone in which fire suppression activities can be safely and effectively conducted. Likewise, it can act as a buffer to protect forest resources.

This direction applies to lands issues because it involves those areas where the forest borders lands of other ownership.

Desired Conditions for Community-Forest Intermix:

- The Community-Forest Intermix Management Area is composed of smaller groups of trees that are more widely spaced than other forested areas. These conditions result in fires that burn primarily on the forest floor and rarely spread as crown fire.
- There is legal and adequate access to public lands for resource management and recreation.
- As a result of forest management, most wildfires are low to mixed severity surface fires resulting in limited loss of structures or ecosystem function.
- Residents and visitors are knowledgeable regarding wildfire protection of their homes and property, defensible space, and appropriate uses of the forests.
- These areas provide a safer firefighting environment than the general forest.

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- Native grasses, forbs, shrubs, and litter (i.e., fine fuels) are abundant enough to maintain and support natural fire regimes, protect soils, and support water infiltration.
 - The composition, density, structure, and mosaic of vegetative conditions reduce uncharacteristic wildfire hazard to local communities and forest ecosystems.
 - Ponderosa pine and dry mixed conifer forest structure is similar to forestwide conditions or is composed of smaller and more widely spaced tree groups than in the general forest.
 - Wet mixed conifer and spruce-fir forests are growing in an overall more open condition than the wet mixed conifer forest outside of the Community-Forest Intermix Management Area. These conditions result in fires that burn primarily on the forest floor and rarely spread as crown fire.
 - Where potential occurs, pure deciduous stands (e.g., aspen, Gambel oak) act as natural firebreaks and enhance scenery.

Guidelines for Community-Forest Intermix:

- To reduce fire hazard and spread of insects and disease onto adjacent lands, slash should be treated (e.g., removal, pull back, relocation, burned) as soon as possible.
- Where more than 80 percent of the host species or 90 percent of the area is infected with dwarf mistletoe (if regeneration or deferred treatment is not feasible), then thinning from below and/or prescribed fire should be used as needed for fire hazard reduction.
- Due to the greater values to be protected (e.g., homes, property), tree basal areas should be at the lower end of the desired range and openings should occur at the higher end of the desired range (as described in the applicable PNVT desired conditions).
- Retention of fire-resistant tree species (e.g., ponderosa pine, Douglas-fir, pure aspen) should be emphasized in the wet mixed conifer and spruce-fir forested PNVTs to reduce fire hazard.

Management Approaches for Community-Forest Intermix:

- Treatments may occur more often than in other management areas. Both mechanized methods and prescribed fire may be used regularly. A higher degree of temporary ground disturbance may occur. The amount of snags and residual large coarse woody debris is generally lower than in the General Forest Management Area. In addition, forest openings are larger and basal areas are lower than in the General Forest Management Area. The management approach within this management area is to complete initial treatments to reduce fire hazard. Once initial treatments are complete, the focus is to maintain the investment and desired conditions primarily through prescribed fire and mechanical treatments. Other objectives may also be considered.
- Best available control technologies are used to limit smoke effects from forest management activities. Forest managers coordinate with adjacent land management agencies and tribes to help reduce the effects of prescribed fire programs on nearby communities. The forests work closely with adjacent landowners and communities, particularly their planning and zoning departments, to encourage new and existing developments to take into account measures to protect people, property, and natural resources from wildfire.

Coconino

Desired Conditions for Land Adjustments

The Coconino NF has a mostly contiguous land base that provides for biologically diverse public lands with minimal effects from adjacent land uses. Most of the forest has a natural-appearing landscape that has not lost its wildland character. Open space values are retained, including those related to naturally appearing landscapes, wildlife habitat, riparian/wetland character, and recreational opportunities.

Management Approach for Land Adjustments

Work with landowners and local and regional governments to encourage policies and development practices that conserve open space, reduce wildfire risk, and retain ecosystem benefits. Provide input to the design requirement of new developments (especially when they are adjacent to the forest) and participate in community growth planning efforts.

Tonto

Use land ownership adjustment to accomplish resource management objectives. Post identifiable property boundaries.

- Specific standards and guidelines are found in the prescriptions under decision units 39, 40, 41, 42, 43, 44 and activities J01, J02, J03, J04, J05, J06, J07, J10, J11, J12, J13, J14, J15, J18, J29.

Lands Special Uses

Apache-Sitgreaves

Desired Conditions for Energy Corridor

- Energy corridors serve a public benefit by providing for a reliable supply of energy essential to local, regional, and national economies.
- Vegetative conditions and land uses within the energy corridor facilitate the operation and maintenance of the associated facilities and infrastructure

Guidelines energy corridor

Within and adjacent to energy corridors, vegetation should be managed similarly to the Community-Forest Intermix Management Area so that facilities stay operational and reduce the hazards of human-caused damage, damage from wildland fire, and falling trees.

Management approach energy corridor

Forest managers work toward establishing voluntary agreements with permit holders to reduce the effects of forest conditions and activities on the facilities.

Coconino

Desired Conditions for Special Uses

Infrastructure on national forest lands associated with private land needs (e.g., utilities, water lines, roads, and bridges) meets scenic goals, particularly as viewed from the highways, concern

level 1 travelways, and recreation sites. New utility construction and reconstruction of existing utility lines uses existing rights-of-way to the extent practical to provide utility access and services to private land and communities. Rights-of-way and authorization for road construction occur at locations and with plans and specifications that effectively protect national forest and other affected owners' lands and resources.

Tonto

Minerals

Apache-Sitgreaves

Desired Conditions

- Mineral developments, including pits, mines, equipment, and associated structures, do not dominate the scenic landscape.
- Mineral materials (e.g., gravel, cinders) are available for road maintenance activities for the Forest Service transportation system, public road system, and ADOT use.
- Mineral materials (e.g., cinders, decorative stone) are available to support resource management needs, personal use, and commercial pursuits.
- Lands where past mineral development or exploration has occurred are returned to stable conditions and vegetated with native species.

Guidelines for Minerals and Geology

- Mineral material resource sites should be located where economical and the scenic integrity objectives can be met. Adverse visual effects should be minimized.
- Existing designated mineral material collection areas and community pits should be utilized to the maximum before new areas are developed. Additional mineral material development should balance private and community needs while providing for sustainable administrative use

Coconino

Desired Condition for Energy and Minerals

Use and development of mineral material sources occurs where needed for forest purposes such as road aggregate, fill, and riprap (i.e., large rocks used to armor road fills, streambanks, and bridge abutments). Mineral materials are available to State, county, and city agencies, where feasible, available, and consistent with other resource values.

Guidelines for Energy and Minerals

To protect social, cultural, and ecological values, the following areas should be considered for no surface occupancy, no leasing, or other leasing stipulations for leasable minerals in:

- Designated and eligible wild and scenic rivers.
- Research natural areas not located in wilderness.
- The foreground of State and national scenic byways and national trails.

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- Areas of very high scenic integrity not located in wilderness, wild and scenic rivers, or other withdrawals.
 - San Francisco Peaks/Mount Elden Recreation Area withdrawal.
 - Areas of very high archaeological site density (greater than 60 sites per square mile) and potentially eligible for the National Register of Historic Places.
 - Areas with threatened, endangered, or sensitive species.
 - Traditional cultural properties where historic preservation laws alone do not adequately protect the cultural resource.

Tonto

Affected Environment

Lands

The acquisition and disposal of National Forest-managed lands are designed to consolidate interest and management of the federal estate to enhance public benefit, and to consolidate the management and ownership of Federal, State and private lands within the proclaimed forest boundary. The establishment of right-of-ways throughout the Forest is needed to create easy accessibility to both public and private lands within the proclaimed boundary of the National Forest.

Land subdivision and development is increasing the need for accurate and reliable surveys. Numerous conflicts between past surveys have occurred, leading to an unknown number of unauthorized occupancies and use violations on national forest lands. Identification of property boundaries is an increasing expense to resource programs, especially fuels treatments. Increasingly, additional expenditures would be necessary in order to fully utilize national forest resources and to prevent claims against the federal government. Although land acquisition eliminates the need for land line location in some areas, many miles of property boundary still need to be surveyed and posted.

Property boundary location involves all activities necessary to identify the boundaries of NFS lands, including the search for survey corners, surveying and marking of land lines, and maintenance of the same. Marking and posting boundaries identifies or locates NFS lands for public use and enjoyment and prevents and controls trespass upon the forests.

There are many private land inholdings within the Project Area. To ensure any treatment is done on private land and to meet Forest Service policy, the boundary lines between FS and private lands should be marked by a professionally licensed land surveyor prior to implementation. (See Lands Reference 1 and 2). This will also ensure the lines are adequately marked so the FS can meet objectives stated in the Apache-Sitgreaves Forest Plan for Community-Forest Intermix and Wildland-Urban Interface; and/or similar directives or desires on other Forests within the Rim Country project area. Boundaries are considered marked to standard if they have been surveyed and posts set at approximately 250' intervals along the boundary line and have been set with boundary signs attached. Some historic boundary lines can be maintained which entails ensuring posts and signs are in good condition and replacing any that are not. This can be accomplished with surveys that have been recently completed, but any posting older than 15 years may be

questionable because of age. Currently the status of boundary lines in the project area is as follows:

Table 1. Miles of Boundary Lines within the Project Area

	Total Miles	Marked	Unmarked	Marked over 15 years ago
Apache-Sitgreaves	374	231	143	182
Coconino	110	55	55	42
Tonto	132.5	125	7.5	75

Overall, it is important to provide ample time to existing land surveying staff to analyze implementation areas, access needs, and provide feedback on necessary time and funding to complete work.

In addition to marking and posting boundary lines before resource work is completed, there are also numerous pieces of direction in the Forest Plans on how land within the Wildland Urban Interface (WUI) and Community-Forest Intermix should be treated. This direction calls for lower basal areas, treatment of slash, and retention of fire-resistant tree species. There is very little restriction on what kind of treatments are used, but Plans do convey the message of minimized smoke effects, reduction of fuel load, and working with communities on defensible space.

The existing access routes through the Project Area may travel across both USFS and private lands. It is important for the FS to ensure rights-of-way are properly obtained in order to protect existing or new roads crossing private property by describing type and duration of use. If a permanent easement for standard use can be obtained in an area that was not historically documented, this would be beneficial to both parties to guarantee the road's protection in the future.

Lands Special Uses

Lands special use authorizations include permits, term permits, leases, and easements that authorize occupancy and use of National Forest System lands. Authorized activities include uses such as utility corridors, roadways, communications sites, research projects, and many other uses. The terms of these authorizations vary based upon the type of use.

As of August 29, 2017, there were 261 active lands special use permits within the project area (Table 2). Of these, 219 (85%) are communication sites, water storage or conveyance, powerlines, roads/easements, and water or waste treatment facilities. These uses have direct effects on human populations and therefore carry greater risks from fire danger than other uses.

Table 2. Lands Special Use Authorizations within the Project Area

Permit Type	Total
Fish Hatchery	2
Fence	2

Cemetery/Church/Monument	3
Waste Disposal Site (solid/liquid)	2
Sewage Line	3
Weather Station	9
Observatory	1
Research/Non-Disturbing Use	8
Warehouse/Storage Yard	4
Processing Plant	1
Powerline	10
Easement	85
Road	21
Communication Site	42
Irrigation/Water	
Transmission/Conveyance	35
Dam/Reservoir/Well/Storage Tank	20
Wildlife Water Supply	10
Stream Gauge	2
Water Treatment Plant	1
TOTAL	261

Permit records are maintained in the Special Use Database System (SUDS),

Recent years show an increasing demand for lands special uses. As communities in and around the Forests increase in development, their need to utilize public lands in support of their infrastructure also increases. Proposals for power lines, rights of way, communications sites, water transmission lines, and roadways have increased steadily and will continue to do so in future years. Increased interest in renewable energy sources, such as wind and solar, has also contributed to the increased demand.

Solar energy potential is high and future development would be related to demand. There may be a need for additional energy corridors or developments (e.g., electric transmission lines, pipelines, wind turbines) because of the expected demand for electricity to serve the growing populations of Arizona and the Southwest and to provide reliable and consistent services. As communities expand and as non-NFS lands surrounded by NFS lands are developed, there may be increased demand for energy development on NFS lands.

Minerals

Minerals of economic interest are classified as leasable, locatable, or salable. Coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources, and all other minerals that may be acquired under the Mineral Leasing Act of 1920, as amended, are referred to as leasable minerals. Common varieties of sand, stone, gravel, pumice, and clay that may be acquired under the Materials Act of 1947 are considered salable minerals. Any minerals that are not salable or leasable, such as gold, silver, copper, tungsten, and uranium, are referred to as locatable minerals.

These mineral deposits include most metallic mineral deposits and certain nonmetallic and industrial minerals. Locatable minerals are subject to the Mining Act of 1872.

Apache-Sitgreaves

Mineral resource activity on the Apache-Sitgreaves NFs has historically been low. Mineral activity is presently concentrated in a few scattered areas. Commodity use and production have shown declines from the past. However, these forest uses contribute to sustaining the lifestyles and traditions of local communities. The potential for locatable minerals on Apache-Sitgreaves NFs lands may be much greater at depth than surface geology would otherwise suggest. The potential for leasable minerals on the Apache-Sitgreaves NFs is low because of the existing geology. There are no known leases on the forests for the following leasable mineral resources: oil and gas, oil shale, coal or geothermal (BLM 2009/2013). Should valid leasable mineral proposals be submitted, the Forest Service would respond as a cooperating agency when requested by the BLM, which acts as the lead agency for subsurface mineral extraction. There are no current leases for oil and gas, geothermal, or coal on the Apache-Sitgreaves NFs.

Coconino

The Coconino National Forest has very few locatable mineral resources, no oil and gas leases or developments, but has potential geothermal resources (no current leases, no developments) associated with the San Francisco Volcanic Field. Locatable minerals with past or current production have included manganese, gypsum, flagstone and pumice. The Forest has a small amount of common variety mineral materials production including cinders, crushed and pit run aggregate, rock and fill dirt, and landscape rock/decorative stone. Most of the use of mineral materials on the forest is by the Forest Service or authorized contractors or permittees for projects and by Coconino County under permits or other agreements. Aggregate production and salable minerals are anticipated to increase with future forest restoration activities. Some areas are withdrawn from locatable mineral entry.

Tonto

No leasable mineral authorizations or applications are currently located on the Tonto NF. The potential for development of leasable minerals in the planning area is low; the geologic depositional environment of the planning area is not conducive to hydrocarbon generation.

The Tonto National Forest has a long history of mining across the national forest.

Although numerous prospects on the Payson Ranger District were identified from the Arizona Department of Mines and Mineral Resources database, most of the gold and silver deposits were found within veins found fairly close to the surface with visible mineralization. Most of the metals could be extracted with minimal milling effort, usually with a stamp mill. Most if not all of the mineralization occurred within “quartz stringers” of a granodiorite intrusion (Botsford 1933). Once these narrow dikes (bands) are mined out, only the “non-visible” or disseminated mineralization is left behind, which requires a much greater milling process and larger scale operation to be profitable.

Arizona is well known for its large porphyry copper deposits, which are low-grade disseminated type deposits that require mining by large-scale, low-per-ton cost methods. The copper minerals are distributed uniformly through large sections or blocks of the deposit, that must be mined by bulk methods, rather than selective or vein mining methods. These bulk mining methods consist of either open-pit or block caving mining methods. Gold and silver occur as secondary metals

that are associated with porphyry-type deposits. Based on historic activity of this district, further exploration efforts may have merit. As a result, the favorability for mineral potential within the Green Valley Mining District and two other districts, the Polk and the Rye Creek, is determined to be moderate (USDI 1993). Although no exploration activity is currently taking place on the Payson Ranger District, the potential for such activities remains.

Asbestos was mined from several large and numerous small workings of the Sierra Anchas Mining District of the Pleasant Valley Ranger District. Asbestos has not been mined in the United States since 2002 (USGS 2014). Although asbestos is still a legal commodity, its use has declined considerably. Combined with the health and environmental concerns associated with asbestos use, as well as the decline in demand, the future potential of asbestos prospecting and development of the Sierra Anchas district is considered low (BOM 1993).

Uranium was also developed within the Sierra Anchas region. Although during the years of 1953-1960 over 122,000 lbs. of uranium oxide concentrate was produced from the Dripping Springs Quartzite in Gila County, the ore grade and extent were often disappointing. Uranium mining in Arizona today is concentrated within the Arizona Strip area of northern Arizona. There are currently no proposed exploration or development activities occurring within the district with regard to uranium production. Therefore, development potential for uranium mineral development within the Sierra Anchas district of Pleasant Valley Ranger District is determined to be low.

Issues/Indicators/Analysis Topics

Seven issues were identified as a result of public scoping conducted in 2016. They are:

- **Treatments in MSO PACs:** The Proposed Action may have negative effects on Mexican spotted owl (MSO) by cutting trees up to 17.9 inches in diameter in MSO protected activity centers (PACs).
- **Treatments in Goshawk Habitat:** The Proposed Action may have negative effects on northern goshawk and canopy-dependent species by reducing late seral, dense understory, and old growth habitat.
- **Large Tree Retention:** The Proposed Action may cause the loss of large trees which may significantly affect old growth recruitment.
- **Dwarf Mistletoe Mitigation:** The Proposed Action includes dwarf mistletoe treatments that may remove the largest trees in some stands. There is also a concern that more dwarf mistletoe mitigation is needed to improve forest vigor, overall health, and resiliency to climate change.
- **Smoke/Air Quality:** The proposed prescribed burning may have negative effects on air quality and human health.
- **Economics:** The Proposed Action does not include measures to make it economically viable. Commenters stated that a wide range of options should be considered in the alternatives that would allow for biomass removal where economically feasible but would also allow other options to dispose of uneconomically feasible biomass.
- **Roads:** The miles of temporary roads in the Proposed Action may negatively affect watershed and stream conditions, and wildlife habitat and connectivity.

None of these issues relate to the potential effects on lands, lands special uses, or minerals, and therefore they do not serve as indicators for analyzing the effects of the project on these resources. However, the project would have an indirect effect in the form of reduced risk of uncharacteristic fire behavior. Uncharacteristic fire behavior presents a threat to the facilities authorized by special use permits and to any structures that may lie on non-forest lands within the project area. Therefore, the indicator used for this analysis is the reduced risk of uncharacteristic fire behavior, as represented by the number of acres treated under each alternative.

Assumptions and Methodology

The Special Uses Database System (SUDS) was used to generate a list of all special use authorizations within the project area. This report was sorted by use type; recreation special uses were then removed from the analysis. The remaining lands special use authorizations were then sorted by status; they were considered as part of the existing condition if they had statuses of application accepted, pending signature, or issued.

Some inaccuracies are commonly known to exist in the SUDS. Permits are sometimes shown as “issued” even after they have expired, or sometimes are shown as expired when in fact they have been reissued and the activity continues. Where it was known or suspected that these permits were still in place and in the process of reissuance, they were considered in the analysis.

Mineral resources were identified using the specialist reports and supporting materials for the Forest Land and Resource Management Plan Revisions for each Forest in the project area.

Assumptions

The following assumptions were made for this analysis:

1. Forest Plan direction will be followed when planning or implementing site-specific projects and activities resulting from this decision.
2. Applicable laws, regulations, and policies will be followed when planning or implementing site-specific projects and activities resulting from this decision.
3. With population growth in the communities within and surrounding the forest, as well as throughout the State of Arizona there will be increased demand for uses such as alternative energy development, utility corridors, and transportation systems.
4. Community and public needs for use of federal land for services and infrastructure, including roads and energy corridors, will continue.
5. Proposals for lands special uses, mineral exploration, and energy development on the National Forests will increase in the foreseeable future.

The primary assumption for the analysis of effects on lands, lands special uses, and minerals is that the number of acres treated under each alternative corresponds directly to a reduced risk of uncharacteristic wildfire behavior within the project area. This in turn corresponds to a reduced risk of damage to structures and facilities within the project area. Therefore, the greater the number of acres treated, the greater the reduction in uncharacteristic fire behavior and therefore the greater positive effect to these resources. This correlation holds true regardless of the mix of treatment methods used (i.e., mechanical thinning, prescribed burning, etc.).

Summary of Alternatives and Resource Protection Measures (Design Features, Best Management Practices, Mitigation and Conservation Measures)

Alternative 1 (No Action)

Alternative A is the no action alternative as required by 40 CFR 1502.14(c). There would be no changes in current management and the forest plans would continue to be implemented. Those forest plan actions and allocations are incorporated by reference. Approximately 10,000 acres of current vegetation management and prescribed fire projects would continue to be implemented within the project area. Approximately 130,000 acres treatments would be implemented within the project area by the Forests in the foreseeable future (within 5 years). Alternative A is the point of reference for assessing action alternatives 2 and 3.

Alternative 2 (Modified Proposed Action)

This alternative proposes vegetation treatments (mechanical thinning and burning) as well as comprehensive restoration treatments for grassland, aquatics, wildlife habitat, and rare species. Some design features focus mechanical thinning treatments on addressing dwarf mistletoe infections. This alternative also proposes treatments that would result in greater openness in some stands.

Specific treatments proposed:

- Mechanically thin trees and/or implement prescribed fire on approximately 899,340 acres.
 - Implement mechanical thinning and prescribed fire on up to 522,310 acres including –
 - Up to 151,400 acres of intermediate thinning
 - Up to 72,830 acres of stand improvement
 - Up to 14,320 acres of single tree selection
 - Up to 283,760 acres of uneven-aged group selection
 - Implement prescribed fire alone on approximately 49,930 acres.
 - Mechanically thin and/or implement prescribed fire on up to 78,910 acres of Mexican spotted owl (MSO) protected activity centers (PACs) including --
 - Up to 22,310 acres of mechanical thinning and/or prescribed fire
 - Up to 49,930 acres of prescribed fire only
 - Up to 6,970 acres of facilitative operations
 - Mechanically thin and/or implement prescribed fire on approximately 25,960 acres of MSO replacement nest/roost recovery habitat.
 - Conduct facilitative operations in non-target cover types to support treatments in target cover types, including –
 - Up to 131,380 acres of facilitative thinning and prescribed fire
 - Up to 6,670 acres of facilitative prescribed fire only in PACs

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- Up to 300 acres of facilitative thinning and prescribed fire in PACs
 - Restore aspen on approximately 1,230 acres, including up to 30 acres in PACs.
 - Restore approximately 125,890 acres that have experienced severe disturbance, including up to 3,610 acres in PACs.
 - Restore approximately 17,590 acres of savanna.
 - Restore approximately 36,340 acres of grassland, including –
 - Maintaining or restoring montane meadow connectivity in pronghorn corridors.
 - Restore hydrologic function and vegetation on approximately 6,760 acres of meadows.
 - Restore approximately 184 springs.
 - Restore function and habitat in up to 777 miles of streams, including stream reaches with habitat for threatened, endangered, and sensitive aquatic species.
 - Restore up to 14,730 acres of riparian areas for aquatic stream habitat.
 - Decommission approximately 200 miles of existing system and unauthorized roads on the Coconino and Apache-Sitgreaves NFs.
 - Decommission approximately 20 miles of unauthorized roads on the Tonto NF.
 - Improve approximately 150 miles of existing non-system roads and construct approximately 330 miles of temporary roads for haul access; decommission all temporary roads when treatments are completed.
 - Relocate and reconstruct existing open roads adversely affecting water quality and natural resources, or of concern to human safety.
 - Construct up to 200 miles of protective barriers around springs, aspen, native willows, and big-tooth maples, as needed for restoration.

Alternative 3 (Focused Alternative)

This alternative would focus restoration treatments only in those areas that are the most highly departed from the natural range of variation (NRV) of ecological conditions, and/or that put communities at risk from undesirable fire behavior and effects. Treatment areas are those that can be moved the furthest toward desired conditions.

Alternative 3 would be used to address moderate and high levels of mistletoe infection, but to a lesser extent on the fewer acres proposed for mechanical treatment and fire. The presence of dwarf mistletoe will not be used to prioritize areas for treatment, but it will be addressed where it exists, using the same types of treatments as Alternative 2. Design features will be developed to focus activity on addressing dwarf mistletoe infestations during implementation of mechanical treatments.

- Mechanically thin trees and/or implement prescribed fire on approximately 474,930 acres.
 - Implement mechanical thinning and prescribed fire on up to 315,770 acres including –
 - Up to 112,790 acres of intermediate thinning

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- Up to 38,880 acres of stand improvement
 - Up to 7,250 acres of single tree selection
 - Up to 157,660 acres of uneven-aged group selection
 - Implement prescribed fire alone on approximately 37,000 acres.
 - Mechanically thin and/or implement prescribed fire on up to 58,255 acres of Mexican spotted owl (MSO) protected activity centers (PACs) including --
 - Up to 18,410 acres of mechanical thinning and/or prescribed fire
 - Up to 37,000 acres of prescribed fire only
 - Up to 3,140 acres of facilitative operations
 - Mechanically thin and/or implement prescribed fire on approximately 20,140 acres of MSO replacement nest/roost recovery habitat.
 - Conduct facilitative operations in non-target cover types to support treatments in target cover types, including –
 - Up to 50,630 acres of facilitative thinning and prescribed fire
 - Up to 2,840 acres of facilitative prescribed fire only in PACs
 - Up to 300 acres of facilitative thinning and prescribed fire in PACs
 - Restore aspen on approximately 1,010 acres, including up to 30 acres in PACs.
 - Restore approximately 27,660 acres that have experienced severe disturbance, including up to 1,410 acres in PACs.
 - Restore approximately 2,400 acres of savanna.
 - Restore approximately 36,340 acres of grassland, including –
 - Maintaining or restoring montane meadow connectivity in pronghorn corridors.
 - Restore hydrologic function and vegetation on approximately 6,760 acres of meadows.
 - Restore approximately 184 springs.
 - Restore function and habitat in up to 777 miles of streams, including stream reaches with habitat for threatened, endangered, and sensitive aquatic species.
 - Restore up to 14,730 acres of riparian areas for aquatic stream habitat.
 - Decommission approximately 200 miles of existing system and unauthorized roads on the Coconino and Apache-Sitgreaves NFs.
 - Decommission approximately 20 miles of unauthorized roads on the Tonto NF.
 - Improve approximately 150 miles of existing non-system roads and construct approximately 170 miles of temporary roads for haul access; decommission all temporary roads when treatments are completed.
 - Relocate and reconstruct existing open roads adversely affecting water quality and natural resources, or of concern to human safety.
 - Construct up to 200 miles of protective barriers around springs, aspen, native willows, and big-tooth maples, as needed for restoration.

Table 3. Detailed Mechanical and Fire Treatments by Alternative

Proposed Treatment	Acres Alt 2 (MPA)	Acres Alt 3 (FA)
Areas assigned treatments using the decision matrices	522,310	316,580
Intermediate Thin	151,400	112,790
IT 10% - 25%	26,940	21,060
IT 10% - 40%	6,370	5,980
IT 25% - 40%	51,920	32,860
IT 40% - 55%	63,930	52,070
IT 55% - 70%	2,240	820
Single Tree Selection	14,320	7,250
ST	14,320	7,250
Stand Improvement	72,830	38,880
SI 10% - 25%	10,960	6,370
SI 10% - 40%	4,510	2,620
SI 25% - 40%	33,790	16,140
SI 40% - 55%	23,110	13,750
SI 55% - 70%	460	0
Uneven Age	283,760	157,660
UEA 10% - 25%	77,490	47,890
UEA 10% - 40%	11,650	9,500
UEA 25% - 40%	116,530	60,800
UEA 40% - 55%	50,930	18,780
UEA 55% - 70%	27,160	20,690
Areas not assigned treatments using the decision matrices	377,020	158,350
Aspen Restoration	1,230	1,010
Aspen Restoration	1,200	980
PAC - Aspen Restoration	30	30
Facilitative Operations Mechanical	131,380	50,630
Facilitative Operations Mechanical	131,080	50,330
PAC - Facilitative Operations Mechanical	300	300
Facilitative Operations Prescribed Fire Only	6,670	2,840
PAC - Facilitative Operations Prescribed Fire Only	6,670	2,840
MSO Recovery - Replacement Nest/Roost	25,960	20,140
MSO Recovery - Replacement Nest/Roost	25,960	20,140
PAC - Mechanical	18,370	16,670
PAC - Mechanical	18,370	16,670
PAC - Prescribed Fire Only	49,930	37,000
PAC - Prescribed Fire Only	49,930	37,000
Savanna	17,590	2,400
Savanna	17,590	2,400
Severe Disturbance Area Treatment	125,890	27,660
PAC - Severe Disturbance Area Treatment	3,610	1,410
Severe Disturbance Area Treatment	122,280	26,250
Total	899,330	474,930

Environmental Consequences

Alternative 1 – No Action

Under this alternative, no large-scale restoration activities would occur. Stand and vegetation structures would be improved only in accordance with each forest plan. With the data available at the time of this report, this would occur on only 140,324 acres. This would make the landscape in the project area less resilient to disturbance and would provide increased fuels for wildland fires and uncharacteristic fire behavior. Increased fire danger would affect lands special uses by threatening the structures they authorize in both the short term (10 years) and long term (20 years and more). Any structures associated with active minerals sites and those located on non-NFS lands would also be similarly threatened. Long-term effects could be the destruction of these facilities by fire, and possibly the closure of fire-damaged areas for rehabilitation. There may be short-term, temporary effects in the form of restricted access to sites during fire suppression activities or post-fire rehabilitation. See the fire ecology report for detailed information on existing and foreseeable fire risk.

Many of these authorized land uses serve and support local communities. If infrastructure is damaged by wildfire, there could be a delay in providing utilities such as power, phone, and water. Emergency service providers could be delayed in providing for health and safety if communication equipment is damaged. Private property has the potential to be affected as a result of wildfires in the area as fires may burn at a higher intensity and severity and would be more difficult to control. Existing land uses would continue to be managed under the current forest plan direction and under the terms of their authorizations and other laws, policies and regulations such as power line clearance requirements and vegetation management along highway corridors for safety purposes and utility reliability.

Effects Common to All Action Alternatives

All action alternatives would improve forest health by restoring forest ecosystems toward their natural, pre-fire-suppression states. While they vary in specific approaches, the overall effect on lands, lands special uses, and minerals would be the same. Increased forest health would lower the risk of undesirable fire behavior, which would reduce the threat to the structures authorized for lands special uses and mineral projects and to those on private lands.

Effects Unique to Each Action Alternative and Differences Among Them

For the purposes of this analysis, the only difference between action alternatives is the number of acres treated (table 4).

Table 4. Comparison of Alternatives by Number of Total Acres Treated

Alternative	Acres Treated Under This Project	Total Acres Treated
1	0	140,324
2	899,330	1,039,654

3	474,930	615,254
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Effects from Rock Pit Use and Expansion

Overview

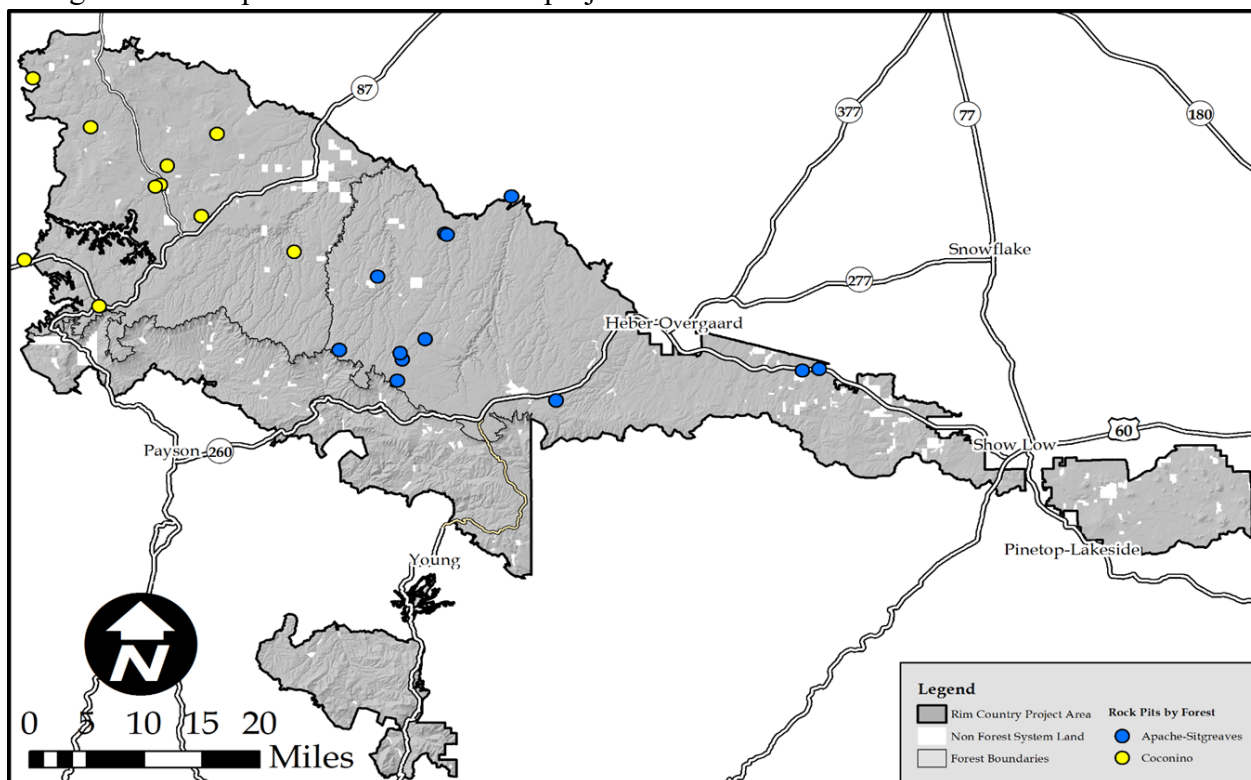
The Rim Country project will require the use of mineral materials for the surfacing of temporary roads and possible resurfacing/maintenance of roads after their use in the implementation of this project. The scope of work proposed in the action alternatives exceeds the mineral materials currently available in existing rock pits within or near the project area. Therefore, the use of one additional rock pit and the expansion of some existing rock pits are being analyzed in the Rim Country EIS.

On the Coconino National Forest, the development, expansion, and use of nine rock pits in the Rim Country project area were analyzed in the Rock Pits Environmental Assessment for the Coconino and Kaibab National Forests (June 2016). One additional rock pit, Park Knoll, is currently being developed by Coconino County under a special use permit; the Forest Service will have access to approximately 20,000 cubic yards of material from this pit.

On the Apache-Sitgreaves National Forest, two ranger districts are within the project area, the Lakeside and Black Mesa Ranger Districts. Surfacing material needs on the Lakeside Ranger District are met by a large county-operated rock pit under special use permit, as well as other commercial sources. On the Black Mesa Ranger District, 11 existing rock pits in the Rim Country project area could be expanded to provide future material for implementation of Rim Country. Each of these rock pits are considered for 30% expansion of their current footprint. The potential environmental effects from the anticipated expansion of these rock pits, as well as those from their use, will be analyzed in the Rim Country EIS.

On the Tonto National Forest, all road surface material needs will be met by local commercial sources. Therefore, no effects from rock pit use on the Tonto will be analyzed under this project. Figure 3 displays the locations of these rock pits in the Rim Country project area.

Figure 3. Rock pit locations within the project area.



Effects

Rock pit use and expansion would be the same under both action alternatives. There would be no effects on lands or lands special uses. The effect on minerals would be that, once used, these resources would no longer be available for other, future projects. The consumption of mineral resources for road surfacing needs under the Rim Country project must be weighed against the cost of purchasing these materials from a commercial source in the future. As budgets continue to shrink, this would be an important consideration. The Coconino and Tonto NFs receive very high levels of use, and road surfacing will continue to be an ongoing need.

Effects from Use of In-woods Processing and Storage Sites

Overview

The western parts of the project area are far from businesses that are able to process the wood products that would result from either of the action alternatives. To make the business opportunities more viable, the project identifies multiple on-forest sites that could potentially be used by contractors for processing wood products.

The closest mill to Rim Country is the Lumberjack Mill, approximately 13 miles from Heber, Arizona, just north of the eastern edge of the project area. The Lumberjack Mill is operated by Good Earth Power. The mill underwent an extensive upgrade in 2017 and is currently processing

dry kilned and finished lumber. On the western side of Rim Country, the closest wood processing facility is Canyon Wood Supply, approximately 25 miles from the western boundary of the project area in Camp Verde, Arizona. Canyon Wood Supply processes ponderosa pine into bundled fuelwood for retail consumption.

Processing sites serve many purposes. Tasks accomplished at processing sites would include drying, debarking, chipping stems and bark, cutting logs, manufacturing and sorting logs to size, scaling and weighing logs, and creating poles from suitable sized logs. Equipment commonly used at processing sites would include circular or band saws, various sizes and types of front-end loaders, log loaders, and several types of chippers. Equipment may include timber processors, planers and mechanized cut to length systems, associated conveyers, and log sorting bunks for accumulation and storage of logs. Electric motors and gas or diesel generators would also be used to provide power.

Eight processing sites were proposed and analyzed for environmental effects in the Cragin Watershed Protection Project (CWPP). These sites are carried forward for potential use in implementing the Rim Country Project. In addition, 13 in-woods processing sites are being proposed and the environmental effects from their use analyzed in the Rim Country EIS. For both projects, processing site location and siting considerations include: flat uplands less than 5% slope; more than 200 feet from perennial, intermittent, and ephemeral stream channels; more than 300 feet from meadows, springs, and karst features; more than ¼ mile from MSO PACs and outside of NOGO PFAs; more than ¼ mile from system hiking trails, campgrounds, and group event recreation sites; more than ¼ mile from private lands, residences, or offices; and adjacent to roads that are open year-round for product removal. Processing sites were located to provide a buffer of 100 to 300 feet from forest roads and state highways to provide for visual screening from Concern Level 1 and 2 travelways.

These 20 in-woods processing and storage sites may be used for implementation of the Rim Country Project over its implementation period for 20 years, or until implementation is completed. Continuous-use processing sites are those where use is expected to be continuous on a regular basis for 10-20 years. These sites are typically the larger 10 to 21-acre areas located close to major highways. Sites originally developed and operated for continuous use would frequently change to intermittent use or occasional use following initial harvest activities in the area. Intermittent use processing sites are those where use is expected to be shorter term and used for one or multiple contract periods, lasting from 3-10 years.

Processing sites may be authorized under timber contract or under special use authorizations. Special use authorizations for processing sites would comply with appropriate policies related to cost recovery and land use fees and other special use regulations (36 CFR 251). A performance bond would be used to insure that all obligations are fulfilled by the contractor or permittee and would be used if needed to cleanup and rehabilitate the processing sites.

Effects

Processing site location and use are the same under both action alternatives. There would be no effects on minerals. There would, however, be potential effects on lands and/or lands special uses.

Residents living within the project area boundaries could be affected by the increased noise, traffic, and emissions produced by active operations at processing sites. These effects would be greater the closer processing sites are to any private lands or special use facilities with residents.

These effects can be mitigated by advance communications with any residents and notifying them of potential active operation timeframes.

Effects from Forest Plan Amendment

Three project-specific plan amendments, all for the Tonto NF, would be required by this project:

- Amendment 1 would bring Alternatives 2 and 3 into alignment with the revised Mexican Spotted Owl Recovery Plan and defer monitoring to the FWS biological opinion that is specific to this project.
- Amendment 2 would provide desired conditions for restoring fire-adapted ponderosa pine in the southwest, clarifying existing direction for managing canopy cover.
- Amendment 3 would remove the language restricting mechanical treatments on slopes greater than 40 percent, allowing mechanical treatments using newer methods and equipment.

There would be no effects on lands, lands special uses, or minerals from these amendments.

Cumulative Effects Analysis

A list of past, current, and future projects was compiled for use by the interdisciplinary team (dated May 15, 2018). Though no narrative description accompanied this table, for the purposes of this report it is assumed that the cumulative effects analysis area is the same as the project area and that this list was complete.

To calculate cumulative effects, the following framework was applied to this project list:

- Includes projects implemented since 2008 (past ten years).
- Projects listed as “current/ongoing” were considered “past” if they were more than 3 years old.
- Where projects were listed with a method-specific breakdown of acres treated, the total for all treatments was used for this report.
- Some projects were listed as having a method-specific breakdown that exceeded the number of acres shown for the original decision. Regardless, the totals listed in the “acres implemented” column were used for this report.

Table 5. Acres Treated Under Past, Present, or Reasonably Foreseeable Projects

Project Type	Acres Treated
Past	460,377
Current/Ongoing	10,407
Reasonably Foreseeable (Future)	129,917
TOTAL	600,701

Table 6. Combined Acres Treated Under Current Project and Past, Present, and Foreseeable Projects.

Alternative	Acres Treated Under This Project	Total Treated Acres in Project Area
1	0	600,701
2	899,330	1,500,031
3	474,930	1,075,631

Alternative 1 – No Action

Vegetation treatments would reduce the risk of uncharacteristic fire behavior on approximately 140,000 acres within the project area. Restoration activities would occur on a project-by-project basis, rather than as a part of a landscape-scale effort. The threat of uncharacteristic fire behavior to lands, lands special uses, and mineral site structures would be reduced somewhat within the project area, but not as much as under the Action Alternatives.

Alternative 2

Under this alternative, approximately 953,130 would receive vegetation treatments and restoration activities. This is a 60% increase over the no-action alternative. Alternative 2 would treat the greatest number of acres and therefore contribute the most toward the reduction of fire risk to lands, lands special uses, and mineral site structures. Fire damage to the facilities or structures in these areas would mean destruction of private property and damage to utility corridors for electricity and water. This would have a significant impact to communities relying on these utilities.

Alternative 3

Under alternative 3, approximately 529,060 acres would receive vegetation treatments and restoration activities. This represents 44% fewer acres than alternative 2, but a 44% increase over alternative 1. Effects on lands, lands special uses, and mineral site structures would be greater than under alternative 1 but less than under alternative 2. The risk of damage to or destruction of utility corridors and private property are also greater than Alternative 1 and less than Alternative 2. This alternative provides the greatest reduction in fire risk to these resources and therefore the greatest positive effects to the people owning these structures and the communities relying on these utilities.

Irreversible and Irretrievable Commitments of Resources

Under all alternatives, there is no foreseeable irretrievable or irreversible commitment of resources in terms of lands or lands special uses. However, the proposed mineral pit expansion and their use to implement this project would consume finite, non-renewable mineral resources.

Unavoidable Adverse Effects

There could be short-term, temporary effects on land special uses and mineral projects as site-specific restoration activities were implemented. For example, access to sites may be temporarily restricted while thinning or burning was occurring. The duration of these effects would be only as

long as the site-specific activities were occurring – for example, the amount of time that thinning was occurring in the vicinity of a particular permit area or mineral site. Prior to any site-specific implementation, the Forest Service would work with affected permit or claim holders to determine site-specific concerns, such as timing restoration activities to avoid periods of high use or access need by the permit holders. Such mitigation would minimize potential adverse effects on these resources.

Short-term Uses and Long-term Productivity

The effects on lands and lands special uses would occur only during the implementation of this project. Once the project was complete, effects would cease. The long-term benefit to structures located on non-NFS lands and those authorized by special use permits would be reduced risk of uncharacteristic fire behavior.

The effects on minerals would be permanent, as consumption of non-renewable mineral resources under this project would remove the availability of these resources in the future.

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