# Descriptions and Specific Management Direction

## *Geographic Area* 1 – *Western Williams Woodland*: 169,041 Acres

This area is situated in the western portion of the Williams Ranger District. An elevated plain interspersed with isolated cinder cones and steep scarp slopes, it contains portions of the Partridge Creek, Upper Verde, and Sycamore Canyon watersheds and yields water into the Verde River. Elevations range from 5,500 feet to 6,800 feet. Drainage systems are ill-defined and flows are ephemeral. Average annual precipitation is 16 inches.

Woodland vegetation is present over most of this area. This biotic community is dominated by pinyon pine, Utah juniper, one-seed juniper, and on the more moist sites, alligator juniper. There is also some ponderosa pine, which typically includes varying concentrations of woodland species. The understory grasses are dominated by blue gramma.

The area provides quality winter and summer habitat for elk and deer. Open areas are used by small herds of pronghorn antelope. The pine stringer habitats are important winter roosting areas for turkey and travel corridors for big game. Management indicator species where present are mule deer, elk, turkey, pronghorn antelope, plain titmouse, and hairy woodpecker. Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

This area is the principal Arizona source of sandstone products. Sandstone quarries are scattered throughout the area. The unit has low potential for locatable and leasable minerals. Several major utility corridors are located in this area.

This *GA* contains sensitive travelways, including Interstate 40 and State Highway 89. There are also important scenic features such as background views of Bill Williams Mountain, as well as foreground and middleground views of rugged canyons and mountains. Recreation resources include historic wagon routes and mountain bike trails. SIOs include areas of High (Level 2), Moderate (Level 3) and Low (Level 4).

The area is known to have high densities of heritage resource sites, however little is known of their significance. Stretches of the Beale Wagon Road Historic Trail and Historic Route 66, a National Register site, cross portions of this management area.

There are five ROS classes represented in this *GA*, including areas of Semi-Primitive Non-Motorized, Semi-Primitive Motorized, Roaded Natural, Roaded Modified, and Rural.

Permitted use presently exceeds capacity on some allotments. About 17,000 acres of this area have been converted to seral grassland through past treatments. There are also large areas of mature, dense pinyon-juniper with very little forage production. The Double A Wild Burro Territory consists of 27,189 acres.

The fuel profile in this area is not conducive to large, high intensity fires. The potential for resource damage is very low and most fires are beneficial and not damaging.

**Management Direction for Recreation Resources:** Provide extensive management of recreation, visual and heritage resources. Make periodic inventories and surveys of recreation, visual, and cultural opportunities and resources. Provide integration and coordination for recreation, visual, and heritage resources in land and resource management planning. Provide modest level of administration, operation, and maintenance of recreation sites and facilities. Provide off-road vehicle area closures to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

Capital investment will be assessed, and planning will proceed as needed to increase recreational opportunities. Maintain areas with Semi-Primitive recreational opportunities. Establish SIO to protect scenic resources. Maintain and enhance the scenic integrity of this area.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure moderate level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat investments to improve habitat components and diversity through vegetative manipulations. Improved habitat diversity and capability accrue through the coordinated interaction of other planned resource practices with planned habitat vegetative manipulations. Develop resource habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Provide for extensive management of livestock use of the range resource. Make periodic inventory of range resource components on all National Forest System lands. Provide range resource integration and coordination in land and resource management planning. Structural improvements and physical movement are utilized in concert to control livestock use of range resources; provide for the periodic maintenance and replacement of structural improvements. Improved forage generally accrues through other resource investments, such as timber stand thinnings, habitat improvement, soil improvements, or catastrophic agents. Long-term grazing use and capacity is kept in balance through the removal or addition of permitted livestock use. Maintain range resource inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources. Make soil and watershed resource inventories and analyses to ensure the conservation of soil and water resources and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning. Changes in site productivity generally result from the interaction of other resource practices or catastrophic agents with the hydrologic condition present in the watershed. Formulate and execute land treatment measures to (1) close, revegetate, and thereby obliterate, system roads not needed for resource actions and (2) establish ground-cover improvements in degraded, unsatisfactory watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements. Maintain soil and water inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the timber resource without personal or commercial timber uses. Make timber stand inventories, surveys, and analyses on all National Forest System lands. Provide timber resource integration and coordination in land and resource management planning. The sale of timber is made only in support of other resource practices. Maintain timber stand inventory and information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of mineral resources to protect surface resource and other environmental values. Restrict or prohibit surface use in areas with habitat of threatened and endangered and sensitive plant and animal species, and heritage resources nominated or posted to the National Register. Impose operating

and occupancy restrictions on exploration, development, and operation activities associated with locatable and leasable mineral entry to protect important wildlife habitat. Evaluate the need for creation or development of areas with substitute or surrogate habitats, facilities, structures etc., to replace areas of substantial loss or destruction from mineral activities. Permit removal of building stone under contract in existing sources not encumbered by mining claims. Allow development of new mineral material sources in accordance with the management direction for recreation, wildlife, and soil and water resources.

**Management Direction for Transportation Facilities:** Provide for extensive management of the Forest Transportation System. Make inventories, surveys and analyses, formulate plans, and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management and protection and safe public access to National Forest System lands. Maintain local terminal roads that support intermittent and short-term resource actions in a ?closed-to-traffic? mode except during said periods of intermittent use. Reconstruct and maintain arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access to National Forest System lands in an ?open-for-traffic? mode. Provide integration and coordination for transportation and facility management in National Forest land and resource management planning and with other Federal, State, County, and other local transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the Management Direction for Soil and Water Resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict *wildland fire* size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 3400 acres. Fires from natural ignitions may exceed these size limits when burning within an approved ara and declared a wildland fire use action. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value *GAs*.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to protect National Forest landownership by detecting and resolving unauthorized land occupancy and trespass. Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest landownership.

## ***Geographic Area* 3 *– Northern Williams Woodland*: 65,533 Acres**

This management area consists of the lower elevation woodland at the north end of the Chalender Ranger District. Located within the Cataract-Spring Valley and Cedar-Deadman watersheds, it is an elevated plain with interspersed isolated cinder cones. Drainage systems are ill-defined with ephemeral flows. Elevations range from 6,500 feet to 7,700 feet.

The soils in this management area are moderately deep with moderate to high suitability for management actions, but about one third is shallow soils or steep, inaccessible slopes. Precipitation is about 15 inches annually.

Most of this area is pinyon-juniper woodland where one-seed juniper and pinyon pine are the dominant tree species and coniferous woodland composed of ponderosa pine, pinyon pine, alligator juniper, and one-seed juniper. The understory grass component is dominated by blue gramma with lesser amounts of mutton bluegrass, Indian ricegrass, spike muhly, junegrass, Needle and Thread, winterfat, and four-wing saltbush. The sensitive plant species *Potentilla multifoliolata* and *Chrysothamnus molestus* are known to occur in this management area with other sensitive species occurrence possible.

This management area is valuable winter habitat for mule deer, elk, pronghorn antelope, and turkey. Ponderosa pine inclusions support Abert squirrel and pygmy nuthatch yearlong with northern goshawk using the pine stringers mainly during the breeding season. There are few reliable sources of water, but ephemeral lakes provide limited breeding habitat for waterfowl and shorebirds. Where present, the management indicator species are mule deer, elk, turkey, plain titmouse, pronghorn antelope, and cinnamon teal. Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

The unit has low potential for locatable and leasable minerals, but there is some use of cinder materials.

This area contains some sensitive travelways, including US Hwy 180 and State Highway 64, and the Great Western Trail. Important scenic features include background views of the San Francisco Peaks, Red Butte, Red Mountain, Kendrick Mountain, and numerous cinder cones. There are foreground and middleground views of Ebert Mountain and other scenic canyons and mountains. The SIOs in this area include areas of High (Level 2) and Moderate (Level 3).

This area has high densities of heritage resource sites, however large portions of the management area have not been surveyed. Portions of the Beale Wagon Road Historic Trail cross the unit.

This area is grazed by cattle and sheep, with most of the area in satisfactory range condition. Permitted use presently exceeds capacity on some allotments. Some areas of pinyon-juniper vegetation have been treated in the past to increase forage and browse production.

The Great Western Trail traverses this area. This *GA* includes areas of ROS classes Roaded Natural, Semi Primitive Motorized, Semi-Primitive Non-Motorized, Roaded Modified, and a very small area of Rural.

The fuel profile is not conducive to large, high intensity fires, with a very low potential for damaging fires.

**Management Direction for Recreation Resources:** Provide extensive management of recreation, visual, and heritage resources. Make periodic inventories and surveys of recreation, visual, and heritage resources. Provide integration of recreation, visuals, and heritage resources in project design and management planning. Provide a moderate level of operation and maintenance of recreation sites and facilities. Determine the level of capital investment that will

be needed to maintain and enhance existing opportunities and increase specific recreational opportunities as needs are identified. Maintain areas with Semi-Primitive Non-Motorized and Motorized recreational opportunities. Follow SIOs to maintain or enhance scenic quality. Provide off-road vehicle area closures and manage ORV use that occurs on other areas to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure high level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat investments to improve habitat components and diversity through vegetative manipulations and the coordinated interaction of other planned resource practices. Develop resource habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Provide for extensive management of livestock use of the range resource. Make periodic inventory of range resource components on all National Forest System lands. Provide range resource integration and coordination in land and resource management planning. Structural improvements and physical movement are utilized in concert to control livestock use of range resources; provide for the periodic maintenance and replacement of structural improvements. Improved forage generally accrues through other resource investments, such as timber stand thinnings, habitat improvement, soil improvements, or catastrophic agents. Long-term grazing use and capacity is kept in balance through the removal or addition of permitted livestock use. Maintain range resource inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the timber resource with the objective of protecting and enhancing wildlife habitat and watershed values. Make timber stand inventories, surveys, and analyses as needed to support these activities. Provide timber resource integration and coordination in management planning and project design for other resource uses. The sale of timber is made only in support of other resource practices and values. Maintain timber stand inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources to ensure their conservation and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning decisions. Formulate and execute land treatment measures to (1) close, revegetate, and hence obliterate, system roads not needed for resource actions, (2) establish ground cover improvements in degraded watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements and the periodic maintenance and replacement of structural improvements. Make soil and water resource analyses and maintain inventory information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of mineral resources to protect surface resource and other environmental values. Restrict or prohibit surface use in areas with habitat of threatened and endangered and sensitive plant and animal species, and heritage resources nominated or posted to the National Register. Impose operating and occupancy restrictions on exploration,

development, and operation activities associated with locatable and leasable mineral entry to protect important wildlife habitat. Evaluate the need for creation or development of areas with substitute or surrogate habitats, facilities, and structures to replace areas of substantial loss or destruction from mineral activities.

**Management Direction for Transportation Facilities:** Provide for extensive management of the Forest Transportation System. Make inventories; surveys; analyses; formulate plans; and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management and protection and safe public access. Maintain local terminal roads that support intermittent and short-term resource actions in a closed-to-traffic mode except during said periods of intermittent use. Provide for seasonal closures of transportation facilities as needed to protect resource values. Reconstruct, maintain and manage use of arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access. Provide integration and coordination for transportation in land and resource management planning and with other Federal, State, County, and other local transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the Management Direction for Soil and Water Resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict wildfire size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 1300 acres. Fires from natural ignitions may exceed these size limits when burning within an approved area and declared a wildland fire use action. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value management areas.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to protect National Forest landownership by detecting and resolving unauthorized land occupancy and trespass. Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest landownership.

## ***Geographic Area* 8 *– Southern Tusayan Woodland*: 195,118 Acres**

This area is situated across the southern portion of the Tusayan unit. It is an elevated plain dissected with numerous drainage systems and isolated scarp slopes. Elevations range from 6,200 feet to 6,700 feet. Drainage systems are well defined and flows are ephemeral. The average annual precipitation is 16 inches.

The majority of the area is woodland vegetation dominated by pinyon pine, Utah juniper and big sagebrush. Grass species include mutton bluegrass, squirreltail, junegrass, Indian ricegrass, and blue gramma. Winterfat, fourwing saltbush, and needle and thread are found with blue gramma and Indian ricegrass on calcareous soils. The category two sensitive plant species *Chrysothamnus molestus* is known to occur in this management area with other sensitive species occurrence possible.

A small proportion of this area is coniferous woodland, characterized by ponderosa pine with pinyon pine and Utah juniper. Big sagebrush and Gambel oak may also be present, but these species are localized. Herbaceous forage species are blue gramma, mutton bluegrass, squirreltail, and junegrass.

This area is winter habitat for mule deer and is used to some extent by wintering elk. Important pine stringer habitat is in this area, which contributes significant diversity to this area. Winter turkey roost tree-groups are a very important feature. The eastern portion of the area provides most of the winter habitat for pronghorn antelope using the area. The management indicator species where present are mule deer, elk, pronghorn antelope, turkey, hairy woodpecker, and plain titmouse. Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

The management area has moderate to high potential for uranium. Prospecting and exploration activities have occurred on numerous uranium prospects throughout the unit. In the past, small amounts of oxidized copper ore have been produced from several prospects within the unit. Copper and other base and precious metals have sometimes been found in association with breccia pipe deposits of uranium. The area has low to moderate potential for oil and gas. Oil and gas leases have been issued for portions of the unit.

The area contains sensitive travelways such as Highway 64, and the Arizona Trail, important scenic features such as Red Butte, and recreation resources such as the historic Anita Station and Moqui Stage Station. SIO include High (Level 2), Moderate (Level 3), and Low (Level 4). A major utility corridor crosses the southern portion of this unit. The unit is suited for expansion of the existing corridor. Avoid location or expansion of additional utility corridors in areas with High (Level 2), or Moderate (Level 3) SIO.

Heritage resource site densities are generally high; however large portions of the unit have not been inventoried. Relatively little is known about the distribution and significance of heritage resource sites in the area, however, it is known historically as a winter use area for the Havasupai people.

The Moqui Stage segment of the Arizona Trail traverses this area. The area encompassing Red Butte is closed to all vehicles. This *GA* includes areas of Rural, Roaded Natural, Roaded Modified, Semi-Primitive Motorized, and Semi-Primitive Non-Motorized ROS classes.

Open grasslands are scattered throughout the area and are important forage areas for livestock. Grazed by cattle and horses, about sixty percent of the area is in satisfactory condition. Permitted grazing use is not presently in balance with grazing capacity. Proper distribution of livestock is difficult to obtain due to the lack of water.

The fuel profile is not conducive to large, high

intensity fires. The potential for resource damage is very low and most fires are more beneficial than damaging.

**Management Direction for Recreation Resources**: Provide extensive management of recreation, visual and heritage resources. Make periodic inventories and surveys of recreation, visual, and cultural opportunities and resources. Provide integration and coordination for recreation, visual, and heritage resources in land and resource management planning. Determine the level of capital investment that will be needed to maintain and enhance existing opportunities, and increase specific recreational opportunities as needs are identified. Maintain areas with Semi-Primitive recreational opportunities. Maintain and enhance the scenic quality of the area. Provide off-road vehicle area closures to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure high level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat investments to improve habitat components and diversity through vegetative manipulations and the coordinated interaction of other planned resource practices. Plan and execute cooperative habitat projects with conservation groups and volunteers. Develop resource habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Range resource management is extensive and accomplished principally through the physical movement of livestock. Structural improvements, rest rotation and deferral are used to control forage use by livestock. Make periodic inventory of range condition. Provide range resource integration and coordination in land and resource management planning. Grazing use and capacity are kept in balance through the addition or removal of livestock. Investments for new structural developments, such as fences and waters, and forage improvements are limited. Forage improvement is principally through other resource investments, such as wildlife habitat improvement projects, watershed treatments and prescribed fire. Provide for the periodic maintenance and replacement of structural improvements. Maintain range resource inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources. Make soil and watershed resource inventories and analyses to ensure the conservation of soil and water resources and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning. Changes in site productivity generally result from the interaction of other resource practices or catastrophic agents with the hydrologic condition present in the watershed. Formulate and execute land treatment measures to (1) close, revegetate, and thereby obliterate, system roads not needed for resource actions and (2) establish ground-cover improvements in degraded, unsatisfactory watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements. Maintain soil and water inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the forest acres with the objective of protecting and enhancing wildlife habitat and watershed values. Make timber stand inventories, surveys, and

analyses on all National Forest lands. Provide tree resource and silvicultural support for land management planning, and project and activity design. The sale of timber products is done only in support of other resource practices. Maintain timber stand inventory and information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of mineral resources to protect surface resource and other environmental values. Restrict or prohibit surface use in areas with habitat of threatened and endangered and sensitive plant and animal species, and heritage resources nominated or posted to the National Register. Impose operating and occupancy restrictions on exploration, development, and operation activities associated with locatable and leasable mineral entry to protect important wildlife habitat. Evaluate the need for creation or development of areas with substitute or surrogate habitats, facilities, and structures to replace areas of substantial loss or destruction from mineral activities.

**Management Direction for Transportation Facilities:** Provide for extensive management of the Forest transportation system. Make inventories; surveys; analyses; formulate plans; and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management and protection and safe public access. Maintain local terminal roads that support intermittent and short-term resource actions in a closed-to-traffic mode except during said periods of intermittent use. Reconstruct and maintain arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access to National Forest System Lands in an open-for-traffic mode. Provide integration and coordination for transportation and facility management in land and resource management planning and with other transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the Management Direction for Soil and Water Resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict *wildland fire* size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 3900 acres. Fires from natural ignitions may exceed these size limits when burning within an approved area and declared a wildland fire use. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value management areas.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to protect National Forest land ownership by detecting and resolving unauthorized land occupancy and trespass.

Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest land ownership.

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## ***Geographic Area* 9 *– Upper Basin*: 43,377 Acres**

This area is in the northeastern part of the Tusayan Ranger District. It is an elevated plain dissected with numerous drainage systems and isolated scarp slopes. Elevations range from 6,200 feet to 6,700 feet in elevation. Drainage systems are well-defined and flows are ephemeral. The average annual precipitation is 16 inches.

The area is principally woodland vegetation, dominated by pinyon pine and Utah juniper interspersed by openings characterized by big sagebrush. Grass species in the area include mutton bluegrass, squirreltail, junegrass, Indian ricegrass, and blue gramma. On degraded sites, blue gramma is the only forage species found. Parts of the area have been reseeded with crested wheatgrass. Winterfat, fourwing saltbush, and needle and thread are dominant or co-dominant with blue gramma and Indian ricegrass on calcareous soils. The category two sensitive plant species *Chrysothamnus molestus* is known to occur in this management area with other sensitive species occurrence possible.

This area is winter habitat for mule deer and is used to some extent by wintering elk. Coconino Rim provides the only extensive black bear habitat in the Tusayan District. The management indicator species where present are mule deer, elk, antelope, turkey, hairy woodpecker, and plain titmouse. Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

The area has moderate to high potential for uranium. Prospecting and exploration activities have occurred throughout the area. It has low potential for oil and gas.

This area contains sensitive travel corridors including State Hwy 64, and scenic features such as the Coconino Rim escarpment. Recreation features include the Arizona Trail, Grandview Lookout Tower, cross-country ski trails and historic sites. SIOs in this area include areas of High (Level 2), Moderate (Level 3), and Low (Level 4).

Heritage resource site densities are generally high, however large portions of the unit have not been inventoried. Little is known about the distribution and significance of heritage resource sites in the management area.

Some concentrated use occurs along the Highway 64 corridor. This *GA* includes areas of Roaded Natural, Semi-Primitive Motorized, and Semi-Primitive Non-Motorized ROS classes.

Open seral grasslands are scattered throughout the area and are important forage areas for livestock and big game. Permitted grazing use is not presently in balance with grazing capacity. Proper distribution of livestock is difficult to obtain due to the lack of water. About one third of the area is in satisfactory range condition.

The fuel profile is not conducive to large, high intensity fires. The potential for resource damage is very low and most fires are more beneficial than damaging.

**Management Direction for Recreation Resources:** Provide extensive management of recreation, visual, and heritage resources. Make periodic inventories and surveys of recreation, visual, and heritage resources. Provide for nomination of eligible properties to the National Register of Historic Places. Provide integration of recreation, visuals, and heritage resources in project design and management planning. Determine the amount capital investment needed to maintain and enhance dispersed recreational opportunities. Maintain areas with Semi-Primitive recreational opportunities. The Coconino Rim escarpment is closed to motorized vehicles. Provide other off-road vehicle area closures and manage ORV use that occurs on other areas to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure high level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat investments to improve habitat components and diversity through vegetative manipulations and the coordinated interaction of other planned resource practices. Plan and carry out cooperative habitat projects with conservation groups and volunteers. Develop resource habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Provide for extensive management of livestock use of the range resource. Make periodic inventory of range condition and components. Provide range resource integration and coordination in land and resource management planning and project and activity design. Structural improvements and physical movement are utilized in concert to control livestock use of range resources. Provide for the periodic maintenance and replacement of structural improvements. Improved forage accrues through other resource investments, such as habitat improvement, watershed treatment or prescribed fire and limited re-treatment of woodland areas. Long-term grazing use and capacity is kept in balance through the removal or addition of permitted livestock use. Maintain range resource inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the timber resource with the objective of protecting and enhancing wildlife habitat and watershed values. Make timber stand inventories, surveys, and analyses on all National Forest System lands. Provide timber resource integration and coordination in land and resource management planning. The sale of timber is made only in support of other resource practices. Maintain timber stand inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources. Make soil and watershed resource inventories and analyses to ensure the conservation of soil and water resources and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning and project design. Formulate and execute land treatment measures to (1) close, revegetate, and thereby obliterate, system roads not needed for resource actions and (2) establish ground-cover improvements in degraded, unsatisfactory watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements. Maintain soil and water inventory and information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of mineral resources to protect surface resource and other environmental values. Restrict or prohibit surface use in areas with habitat of threatened and endangered and sensitive plant and animal species, and heritage resources nominated or posted to the National Register. Impose operating and occupancy restrictions on exploration, development, and operation activities associated with locatable and leasable mineral entry to protect important wildlife habitat. Evaluate the need for creation or development of areas with substitute habitats, facilities and structures to replace areas of substantial loss or destruction from mineral activities

**Management Direction for Transportation Facilities:** Provide for extensive management of

the Forest transportation system. Make inventories, surveys, analyses, formulate plans and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management. Provide safe public access to National Forest System lands. Maintain local terminal roads that support intermittent and short-term resource actions in a closed-to-traffic mode except during said periods of intermittent use. Reconstruct and maintain arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access. Provide integration and coordination for transportation and facility management in National Forest land and resource management planning and with other Federal, State, County, and other local transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the management direction for Soil and Water Resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict *wildland fire* size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 900 acres. Fires from natural ignitions may exceed these size limits when burning within an approved area and declared a wildland fire use action. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value management areas.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to protect National Forest landownership by detecting and resolving unauthorized land occupancy and trespass. Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest landownership.

## ***Geographic Area*** **12** ***Western North Kaibab Woodland*****: 146,480 Acres**

This management area includes portions of the western, northern, and eastern sides of the North Kaibab Ranger District and includes the west half of the woodland zone. This area is in the Kanab Creek, Coyote Wash, and Houserock-Marble watersheds. It is an elevated plain dissected by numerous drainage systems and displaying karst topographical features such as solution basin, sinkholes, etc. Elevations range from 5,200 feet to 6,800 feet. Drainage systems are well-defined and flows are ephemeral. The annual precipitation ranges from 14 to 18 inches.

Most of this area is dominated by woodland vegetative species and characterized by pinyon pine, cliffrose, and Utah juniper, with Gambel oak at higher elevations. The understory is mainly big sagebrush, snakeweed and rabbitbrush. Impacted range sites are dominated by blue gramma, but squirreltail, junegrass, Indian ricegrass, and mutton bluegrass are present on better sites.

The area is critical winter range for approximately 65 percent of the North Kaibab mule deer herd which depends heavily on the cliffrose, big sagebrush and the early spring grasses and forbs. The category two sensitive plant species *Rosa stellata* is known to occur in this area with other sensitive species occurrence possible. In the higher elevations there are ponderosa pine stringers and coniferous woodland pine-juniper fringe which is turkey winter roost habitat. Gambel oak provides important cover and mast for turkey. The management indicator species where present are mule deer, plain titmouse, pronghorn antelope, turkey and pygmy nuthatch.

Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

The management area has moderate to high potential for uranium; however the entire area is located within the Grand Canyon National Game Preserve and thus closed to entry under the mining laws. The area has low to moderate potential for oil and gas. Oil and gas leasing, prospecting and exploration activities have been concentrated in the northern portion of the unit.

Several gravel material pits are located within the unit.

Visually sensitive areas occur along Highway 89A, FDR 422, the rim of the Grand Canyon and several forest roads leading to points overlooking Grand Canyon. Management activities in these areas are visually subordinate to the characteristic landscape.

This area has densities of heritage resource sites varying from low to high, however less than 2 percent of the area has been inventoried for these archeologic and historic sites and little is known about the distribution and significance of sites in the area.

Moderate use areas occur along roads that access points overlooking the Grand Canyon. Several of these roads also lead to trail heads which provide access to Kanab Creek Wilderness Area and Grand Canyon National Park. The predominate ROS classification is roaded and natural appearing, although there are several large areas classified as semi-primitive.

The area is grazed by cattle and most of the area is winter range. Permitted grazing use is in balance with estimated grazing capacity, but about one third of the area is still in unsatisfactory condition.

The fuel profile is not conducive to large, high intensity fires. The potential for resource damage is very low and most fires are more beneficial than damaging.

**Management Direction for Recreation Resources:** Provide extensive management of recreation, visual, and heritage resources. Make periodic inventories and surveys of recreation, visual, and heritage resources. Provide integration of recreation, visuals, and heritage resources in project design and management planning. Ensure a moderate standard of operation and maintenance of recreation sites and facilities. Formulate and execute capital investments to increase recreation opportunities for hiking, riding, fishing, camping, viewing scenery, and interpretation of historic or heritage trails and sites. Work with cooperators, conservation groups, and volunteers to construct and maintain facilities. Maintain areas with non-motorized recreation opportunities. Establish visual quality objectives to protect and enhance visual resources in transportation corridors. Corridors along Highway 89A, and along the Grand Canyon Rim are managed visually with retention or partial retention objectives. Establish off-road vehicle area closures and manage ORV use to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure moderate level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat investments to improve habitat components and diversity through vegetative manipulations. Improved habitat diversity and capability accrue through the coordinated interaction of other planned resource practices with planned habitat vegetative manipulations. Develop habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Provide for extensive management of livestock use of the range resource. Make periodic inventory of range resource components on all National Forest System lands. Provide range resource integration and coordination in land and resource management planning. Structural improvements, rest rotation and deferment are utilized in concert to control livestock use of range forage. Provide for the periodic maintenance and replacement of structural improvements. Improved forage accrues through other resource investments, such as wildlife habitat improvement, watershed improvements, and prescribed fire. Long-term grazing use and capacity is kept in balance through the removal or addition of livestock use. Maintain range resource inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources. Make soil and watershed resource inventories and analyses to ensure the conservation of soil and water resources and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning. Changes in site productivity generally result from the interaction of other resource practices or catastrophic agents with the hydrologic condition present in the watershed. Formulate and execute land treatment measures to (1) close, revegetate, and thereby obliterate, system roads not needed for resource actions and (2) establish ground-cover improvements in degraded, unsatisfactory watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements. Maintain soil and water inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the timber resource with the objective of protecting and enhancing wildlife habitat and watershed values. Make timber stand inventories, surveys, and analyses on all National Forest System lands. Provide timber resource integration and coordination in land and resource management planning. The sale of timber and other forest products is made only in support of other resource practices. Maintain timber stand inventory and information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of leasable mineral resources to protect surface resources and other environmental values. Impose operating and occupancy restrictions on exploration, development, and operation activities associated with leasable mineral entry to protect visually sensitive road corridors and important wildlife habitat. Evaluate the need for creation or development of areas with substitute habitats, facilities, structures etc., to replace areas of substantial loss or destruction from mineral activities. Discontinue removal of common variety minerals and rehabilitate existing sources located within visually sensitive road corridors and other areas with visual quality objective of retention and partial retention. Prevent further development of common variety sites in such areas. Prohibit construction of oil and gas well surface facilities in the visible foreground of Highway 89A.

**Management Direction for Transportation Facilities:** Provide for extensive management of the Forest Transportation System. Make inventories; surveys; analyses; formulate plans; and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management and protection and safe public access to National Forest System lands. Maintain local terminal roads that support intermittent and short-term resource actions in a closed-to-traffic mode except during said periods of intermittent use. Reconstruct and maintain arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access to National Forest System Lands in an open-for-traffic mode. Provide integration and coordination for transportation and facility management in National Forest land and resource management planning and with Federal, State, County, and local transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the Management Direction for Soil and Water Resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict *wildland fire* size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 2900 acres. Fires from natural ignitions may exceed these size limits when burning within an approved area and declared wildland fire use action. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value management areas.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to

protect National Forest landownership by detecting and resolving unauthorized land occupancy and trespass. Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest landownership.

## ***Geographic Area* 16 *– Eastern North kaibab Woodland*: 131,221 Acres**

This management area includes the Buffalo Ranch and the extreme eastern side of the North Kaibab Ranger District. It includes portions of the Coyote Wash and Houserock-Marble watersheds. It is an elevated plain dissected by numerous well-defined drainages. Water flows are ephemeral, except for several springs in the area. Elevations range from 5,200 feet to about 8,200 feet at Tater Point. Precipitation ranges from 14 to 18 inches per year.

The majority of this area is dominated by woodland vegetation consisting largely of pinyon pine and Utah juniper. At higher elevations there are ponderosa pine stringers. The understory typically includes big sagebrush, snakeweed and rubber rabbitbrush. On rocky slopes, cliffrose is also common. Impacted range sites are dominated by blue grama although squirreltail, junegrass, Indian ricegrass and mutton bluegrass are present on the better sites. *Pediocactus paradinei*, is known to occur in this management area with other sensitive species occurrence possible. Recent surveys have not found Rosa stellata on the Forest, but potential habitat is present.

The area provides important winter range for mule deer, and year-long habitat for antelope and for a bison herd of about 100 head. Approximately 70 percent of this management area is in the Grand Canyon National Game Preserve. The management indicator species where present are mule deer, plain titmouse, pronghorn antelope, turkey and pygmy nuthatch.

Riparian indicator species are Lucy's warbler, yellow breasted chat and aquatic macroinvertebrates.

The management area has moderate potential for uranium; however only that portion of the area not in the Grand Canyon National Game Preserve is open to entry under the mining laws. The area has low to moderate potential for oil and gas.

The area contains densities of heritage resource sites varying from low to high; however less than two percent of the area has been inventoried for heritage resource sites. Little is known about their distribution and significance.

Recreation use within the area is low. Moderate use occurs along roads that access points overlooking Marble Canyon. Several of these roads also access trail heads which provide access to Saddle Mountain Wilderness Area. The principal visitation is by big game hunters. All of this area is classified as semi-primitive or semi-primitive motorized.

Shrub-grasslands and pinyon-juniper understory forage provide grazing capacity for cattle and bison. Cattle graze portions of the area seasonally during the summer and winter. Permitted grazing use is within the estimated grazing capacity.

The fuel profile is not conducive to large, high intensity fires. The potential for resource damage is very low and most fires are more beneficial than damaging.

**Management Direction for Recreation Resources:** Provide extensive management of recreation, visual and heritage resources. Make periodic inventories and surveys. Provide integration and coordination for recreation, visual, and heritage resources in land and resource management planning and project design. Provide modest level of administration, operation, and maintenance of recreation sites and facilities. Investments are needed to increase recreation opportunities for hiking, equestrian use, and interpretation of historic or heritage trails and sites. Maintain areas with non-motorized recreation opportunities. Visual quality objectives are established for retention or partial retention of landscape elements in the foreground along

Highway 89A, the Arizona Trail and FDR 249. Provide for maintenance and protection of visual qualities in other areas through the interaction of planned resource actions with the various elements present in the landscape. Provide off-road vehicle area closures as needed and manage ORV use occurring on other areas to maintain recreation, visual, heritage, soil, water, wildlife, and other resource values.

**Management Direction for Wildlife and Fish Resources:** Provide for intensive management of wildlife and fish habitats. Make habitat surveys, analyses, and formulate plans in concert with the Arizona Game and Fish Department to ensure moderate level of habitat diversity and capability. Provide wildlife and fish resource integration and coordination in land and resource management planning. Formulate and execute habitat projects to improve habitat components and diversity through vegetative manipulations. Plan and develop projects with the assistance of cooperators, conservation groups and volunteers. Improve habitat diversity and capability through the coordinated interaction of other planned resource practices . Develop resource habitat management plans for all threatened and endangered and sensitive plant and animal species. Maintain habitat inventory and management record system.

**Management Direction for Range Resources:** Provide for extensive management of livestock use of the range resource. Make periodic inventory of range resource components on all National Forest System lands. Provide range resource integration and coordination in land and resource management planning. Structural improvements and physical movement are utilized in concert to control livestock use of range resources. Provide for the periodic maintenance and replacement of structural improvements. Improved forage generally accrues through other resource investments, such as wildlife habitat improvement, watershed improvements, or prescribed fires. Long-term grazing use and capacity is kept in balance through the removal or addition of permitted livestock use. Maintain range resource inventory and information systems.

**Management Direction for Timber Resources:** Provide for environmental management of the timber resource with the objective of protecting and enhancing wildlife habitat and watershed values. Make timber stand inventories, surveys, and analyses on all National Forest System lands. Provide timber resource integration and coordination in land and resource management planning. The sale of timber is made only in support of other resource practices. Maintain timber stand inventory and information systems.

**Management Direction for Soil and Water Resources:** Provide for intensive management of soil and watershed resources. Make soil and watershed resource inventories and analyses to ensure the conservation of soil and water resources and to avoid significant and permanent impairment of site productivity. Provide soil and water resource integration and coordination in land and resource management planning. Formulate and execute land treatment measures to (1) close, revegetate, and thereby obliterate, system roads not needed for resource actions and (2) establish ground-cover improvements in degraded, unsatisfactory watersheds to return them to satisfactory condition. Provide for the long-term maintenance of vegetative ground-cover improvements. Maintain soil and water inventory and information systems.

**Management Direction for Mineral Resources:** Provide intensive management of prospecting, exploration, and development of mineral resources to protect surface resource and other environmental values. Restrict or prohibit surface use in areas with habitat of threatened and endangered and sensitive plant and animal species, important recreation sites and facilities, and heritage resources eligible for nomination or posted to the National Register. Impose operating

and occupancy restrictions on exploration, development, and operation activities associated with locatable and leasable mineral entry to protect visually sensitive road corridors and important wildlife habitat. Evaluate the need for creation or development of areas with substitute or surrogate habitats, facilities, and structures to replace areas of substantial loss or destruction from mineral activities. Discontinue removal of common variety minerals and rehabilitate existing sources located within road corridors and other areas with visual quality objective of retention and partial retention. Prohibit development of additional common variety sites in these areas. Prohibit construction of mine and oil and gas well facilities in the visible foreground of Highway 89A.

**Management Direction for Transportation Facilities:** Provide for extensive management of the forest transportation system. Make inventories; surveys; analyses; formulate plans; and execute construction, reconstruction, and maintenance operations to provide transportation facilities that support resource management and protection and safe public access. Maintain local terminal roads that support intermittent and short-term resource actions in a closed-to-traffic mode except during said periods of intermittent use. Reconstruct and maintain arterial, collector, and local service roads that are needed for support of continuing, long-term resource practices and public access. Provide integration and coordination for transportation and facility management in land and resource management planning and with other Federal and State transportation authorities. Identify and obliterate unneeded system roads and facilities in accordance with the management direction for soil and water resources.

**Management Direction for Fire Protection:** Provide fire protection to restrict *wildland fire* size to 200 acres. Emphasize suppression responses and tactics which minimize fire fighting costs. Long term average annual burned area should not exceed 2,600 acres. Fires from natural ignitions may exceed these size limits when burning within an approved area and declared a wildland fire use action. Priority for fuel treatment investment is low and should be limited to rural/urban interface and protection of adjacent, higher value management areas.

**Realty Management Direction:** Provide for efficient management of realty resources that responds to needs for special land uses, rights-of-way, adjustments to land ownership, and property corner and boundary establishment and maintenance. Provide timely evaluation, administration, and termination of special land uses. Minimize the amount of land allocated to electronic sites and utility corridors consistent with appropriate accommodation for these public services that can be met only on National Forest System lands. Acquire lands and interests in lands to provide consolidated land ownership, public and administrative access to National Forest Lands, and efficient resource management. Identify property corners and boundaries to protect National Forest landownership by detecting and resolving unauthorized land occupancy and trespass. Administer the Small Tracts Act to resolve trespass and improve and consolidate National Forest landownership.

# Work Activities, Standards and Guidelines - *Geographic Areas* 1, 3, 8, 9, 12 & 16

These work activities apply to Management Areas 1, 3, 8, 9, 12, and 16. They do not apply to *GAs* in the suitable timber base, wilderness, special areas, or developed recreation areas; work activities and their standards and guidelines for these areas are in the management direction for the respective management area.

Each work activity and its associated standards and guidelines is a management practice, i.e. "a specific action, measure, course of action, or treatment" (36CFR 219.3). Work activities are defined and described in Appendix A of this document. When applied in concert with the resource management direction established for each management area, the following work activities and their standards and guidelines form the integrated management prescription specified for on-the-ground application in the management area. The purpose of the management prescription is to attain: (1) multiple use and (2) the goals and resource objectives established in Chapter 4 of this document. The vehicle for transferring the Management Direction that is specified in this document to on-the-ground application is termed "integrated resource management". This means of on-the-ground application is described and set forth in Integrated Resource Management, 4th Edition, 1993, Southwest Region, USDA Forest Service. Integrated Resource Management provides for an interdisciplinary approach that coordinates public participation, preparation, analysis, execution, and the subsequent monitoring and evaluation of those management practices that are specified in this Forest Plan.

**Recreation Planning**

Dispersed Recreation:

1. NZ: Refer to Recreation Opportunity Spectrum Map for recreation management objectives.
2. NZ: Use traffic counts, trail counts, and visitor registration systems to determine dispersed recreation use (RIM reliability class 4). Use visitor counts and length of stay data to determine use of popular dispersed facilities and areas (RIM reliability class 3). Update recreation opportunity spectrum inventory and classifications at 5-year intervals beginning in 1990. Monitor off-road vehicle (ORV) use during scheduled patrols and revise the ORV plan to prevent resource damage and user conflicts. Prepare district recreation operation and maintenance plans annually for dispersed areas. Revise district recreation opportunity guides as necessary.

   SZ: Use National Visitor Use Monitoring (NVUM), traffic counts, trail counts, and visitor registration systems to determine dispersed recreation use. Update ROS inventory and classifications at 5-year intervals beginning in 2010. Monitor off-road vehicle (ORV) use during scheduled patrols and revise the ORV plan to prevent resource damage and user conflicts. Prepare district recreation operation and maintenance plans annually for dispersed areas. Revise district recreation opportunity guides as necessary.
3. Manage the Beale Wagon Road Historic Trail, Overland Road Historic Trail and Moqui Stage segment of the Arizona Trail corridors on National Forest System lands and associated historic sites and side trails for their historic significance. Use of motorized vehicles on any portion of the routes not already designated for general vehicle travel is prohibited. Emphasize foot and horse travel recreation activities on intact portions of the

routes. Provide adequate off-road vehicle (ORV) signing to advise the public of motorized restrictions. Formulate comprehensive trail management plans to promote the historic and cultural significance of the trails, incorporating the direction outlined in this plan. Recognize the needs of the disabled and those with limited mobility in developing access facilities for the trails. Propose recreational facilities for the trails which are related to significant interpretive and recreational points of interest, on, or adjacent to the trails. Emphasize protection for the historic value of the trail routes. Maintain one representative visual logo for each trail. Revise and expand current publications in cooperation with local sponsors.

Heritage Resources:

1. Comply with various legal mandates related to the management of heritage resources, including the Programmatic Agreement Regarding Cultural Property Protection and Responsibilities.
2. Coordinate all phases of heritage resource management with planning activities of the State Historic Preservation Officer (SHPO) and State Archeologist, and with other State and Federal agencies. Coordinating activities include: consultation and meetings; sharing of data, plans, reports, interpretations and other documents; coordination on National Register nominations, and; participation in the State heritage resources planning process.
3. Consult with Indian tribes to obtain tribal advice and input in the development and implementation of projects proposed in areas of known socio-cultural or religious significance.

NZ: Visual Resources:

1. Refer to Visual Quality Objective Map for management objectives and the location of visual features.
2. Manage visual features specified is site-specific analysis to meet their assigned visual quality objectives in accordance with the following standards:
   a. Visual resource management standards for visual features in coniferous forest foreground areas with assigned retention or partial retention objective are:
      (1) Treat vegetation to achieve the following condition class distribution within the visual feature for retention objective:
         (a) Seedling and sapling: 10 to 30 percent of area.
         (b) Immature and mature poletimber: 10 to 30 percent of area.
         (c) Mature and overmature sawtimber: 60 to 80 percent of area.
      (2) Treat vegetation to achieve the following condition class distribution within the visual feature for partial retention objective:
         (a) Seedling and sapling: 10 to 30 percent of area.
         (b) Immature and mature poletimber: 20 to 40 percent of area.
         (c) Mature and overmature sawtimber: 40 to 60 percent of area.
      (3) Provide for prompt cleanup of activity slash.
      (4) Created opening is not larger than two acres in retention and not larger than four acres in partial retention.
      (5) Maintain or enhance species diversity.

(6) Modify intermediate or any even-aged vegetation treatments to:

(a) Reduce typical stand size to 10 - 60 acres.

(b) Maintain relatively high residual basal area to minimize visual vulnerability.

(c) Feather edges of treatment areas.

(d) Maintain vertical diversity through retention of groups of older and larger trees.

b. NZ: Visual resource management standards for visual features in woodland foreground areas with assigned retention or partial retention objective are:

(1) Treat vegetation to enhance visual diversity in large homogenous areas in the visual feature.

(2) Prompt cleanup of activity slash.

(3) Modify vegetation treatments to:

(a) Reduce typical stand size.

(b) Maintain relatively high residual basal area to minimize visual vulnerability.

(c) Feather edges of treatment areas.

(d) Maintain vertical diversity through retention of groups of older and larger trees.

c. NZ: Vegetation treatments in middleground and background areas with assigned retention and partial retention visual quality objective are visually subordinate to the characteristic landscape. Modify Treatments to:

(1) Reduce typical stand size.

(2) Maintain relatively high residual basal area to minimize visual vulnerability.

(3) Feather edges of treatment areas.

(4) Maintain vertical diversity through retention of groups of older and larger trees.

d. NZ: Use the viewshed corridor plan for State Highway 67.

**Inventory**

Heritage Resources:

1. Heritage Resource overviews have been completed for the Forest. Review and update overviews as new information becomes available or to meet specific management or planning needs.

2. Conduct surveys and evaluate impacts of specific undertakings in project-level analyses in accordance with 36 CFR 800 and the Programmatic Agreement. In consultation with the SHPO and the Advisory Council on Historic Preservation, manage heritage resource sites during the conduct of undertakings to achieve a "No Effect" or "No Adverse Effect" finding when possible. When sites will be affected, consult on appropriate treatment measures. Provide for heritage resource survey and related site inventory, preliminary evaluation and marking in advance of undertakings, with preference given to site avoidance over other methods of site protection. Design inventory standards according to parameters specified in the Programmatic Agreement and Forest Service Handbook.

3. Consider rejection, denial, redesign or relocation of proposed resource uses or projects to allow in-place preservation of heritage resources in the following circumstances:

(a) Present methods of investigation and data recovery cannot realize the current research potential of the sites.

(b) Sites are likely to have greater importance for addressing future research questions than current ones.

(c) Cultural values derive primarily from qualities other than research potential, and those values are fully realized only when the cultural remains exist undisturbed in their original context (e.g., association with significant historical persons or events, special ethnic or religious values, or unique interpretive values).

(d) Heritage Resources are important primarily for the quality of their architecture and the integrity of their setting.

(e) Preservation in-place is necessary to accomplish the objectives of the State Historic Preservation Plan.

(f) Site densities make data recovery economically infeasible, or require unattainable operating conditions.

4. Initiate a program of heritage resource survey of areas not scheduled for ground disturbing activities. Preference shall be given to areas with known or inferred high site densities, those expected to yield important information regarding the historic or prehistoric occupations of the Forest and areas of high risk for vandalism or natural destruction of heritage resource properties. At a minimum, survey of such areas shall be conducted in conjunction with annual update training for para-professional archeologists.

5. Participate in the development and implementation of a Cultural Resources Allocation Plan.

NZ: Visual Management:

1. Inventory the existing visual condition (EVC) and visual absorption capability (VAC) of the landscape in this planning period; revise the existing visual resource inventory.

**Heritage Resource Evaluation and Assessments**

Evaluate and nominate sites to the National Register of Historic Places based on the criteria, frequency, schedule and priorities established in the Forest overview documents,

**Heritage Resource Protection and Enhancement**

Include site protection and liability clauses in Forest contracts, permits and leases that have the potential to affect heritage resources. Monitor sites within undertakings to determine the effectiveness of protection measures and the need for site stabilization, damage assessment and liability. At a minimum, inspect and document the findings of at least one site, and not less than 20 percent of the sites, designated for protection within each undertaking. Inspect all sites listed in, nominated to or formally determined eligible for the National Register within each undertaking. Follow damage assessment procedures specified in the Programmatic Agreement and Forest Service Handbook.

Outside the area of undertakings, inspect sites to assess the impact of vandalism, natural destruction, and determine the need for site stabilization. The frequency and priority for site inspection and monitoring shall be based on its relative susceptibility to rapid deterioration or human disturbance. All sites listed in or nominated to the National Register shall be inspected biannually. Inspect eligible sites periodically. Include a priority listing of sites requiring stabilization in the Cultural Resource Assessment Plan based on criteria established in the Programmatic Agreement.

Use signing, fencing, administrative closure, increased patrolling, investigations, interpretive programs, stabilization and data recovery, as appropriate, for site protective measures. Consult

with Indian tribes to obtain tribal advice and input in the development and implementation of heritage resource site data recovery programs.

**Recreation Facility and Site Management**

Consult with Indian tribes to obtain tribal advice and input in the development of interpretive opportunities of prehistoric occupations.

**Recreation Use Administration**

Operate and maintain heavily used dispersed areas and facilities to standard service management by providing regular scheduled patrols throughout the recreation season. Provide control measures for areas where the following resource damage occurs: (1) soil compaction, (2) loss of vegetative cover, (3) tree damage and mortality, and (4) deterioration of water quality.

Enforce the 14 day stay limit.

NZ: Close project specific areas to off-road vehicle traffic; refer to ORV Map for location of closure areas. SZ: Close project specific areas to off-road vehicle traffic; refer to ORV Map for location of closure areas, and ROS Map for location of SPNM areas.

Close the Big Springs (South Kaibab), Junction Tank, MC Tank, Kennedy Dam, Russell Tank, Lockett Lake and Big Springs (North Kaibab) fisheries to off-road vehicle use upon construction.

Prohibit off-road competitive events.

Implement permanent, temporary or seasonal closures of areas to off-road vehicle traffic to protect soil, vegetation, visual, wildlife, wildlife habitat and cultural and historic resources.

**Trail Construction**

Make trail improvements and investments as specified in project level analysis and the following guidelines:

1. Construct the Saginaw Trail, South Bill Williams Trail, North Kendrick Trail, Kendrick Cross Country Ski Trail, and Ten-X Trail. Close to motorized vehicles.
1. Close the Arizona Trail to motorized vehicles.
2. Provide interpretive signing at points of interest along trails and prepare and publish information brochures.
3. Allow private sector construction and operation of the Jacob Lake Nordic ski trail and separate snowmobile trail system.
4. Evaluate the feasibility of the Coconino Rim Trail.

**Trail System Maintenance and Operation**

Inspect recreation trails annually. Maintain trails to maintenance level 3 or higher (as defined in FSH 1309.11a 1986-1990).

**Wildlife, Surveys, Planning, Prescriptions, Monitoring, Coop, and Administration**

Habitat management for Federally listed species will take precedence over unlisted species. Habitat management for endangered species will take precedence over threatened species. Habitat management for sensitive species will take precedence over non-sensitive species.

Survey, inventory, monitor, and evaluate habitat diversity; species composition; impact of management activities; and the distribution and density of management indicator species, threatened and endangered species, and sensitive species. Evaluate habitat for those species in Threatened Native Wildlife in Arizona.

Monitor management practices and evaluate their impact within occupied and potential habitats of Apache trout, bald eagle, and peregrine falcon. Determine need for consultation with USDI Fish and Wildlife Service. Implement recovery plans for threatened and endangered species. Prepare and implement an area management plan to conserve and protect the peregrine falcon in a manner consistent with recovery goals.

Monitor management practices and evaluate their impact within occupied and potential habitats of candidate species. Manage habitats to sustain species viability and prevent listing as threatened and endangered.

Take all reasonable precautions, consistent with policies regarding jeopardy to human life and property, during fire suppression, search and rescue, or other emergency operations to conserve and protect threatened and endangered species, candidate species, sensitive species and their habitats.

Apply standards and guidelines on an assessment area basis, (approximately 10,000 acres) except for old-growth habitat, to ensure distribution of habitat components throughout the range of dependent species. Improve stand diversity and

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habitat for wildlife through Integrated Resource Management.

Survey and evaluate assessment areas during IRM. Design projects to achieve the following habitat standards:

1. Forage.
   a. Provide forage cover ratios of 40:60 to 60:40. in areas where TES species habitat requirements do not conflict.
   b. Give priority to areas in need of additional forage for elk and mule deer when scheduling pinyon-juniper fuelwood special cutting for wildlife habitat non-structural improvement. Treatments are usually done in areas removed from disturbance to maximize habitat effectiveness.
   c. Increase efforts to resolve conflict with livestock grazing in all critical wildlife habitats to achieve resource management objectives. In areas of conflict, new winter grazing use by livestock will be allowed when such use does not adversely affect wildlife objectives. Allocate forage to (a) maximize habitat capability for threatened and endangered species and (b) provide habitat capability for indicator and harvest species in the range specified in the State Comprehensive Wildlife Plan.
   d. When determined that wildlife populations are damaging the range resource, the Forest Supervisor will advise the Arizona Game and Fish Department to address Wildlife population numbers and, or wildlife management to correct the problem.

2. Cover.
   a. Provide for at least 40 percent cover where TES species habitat requirements do not conflict.
   b. Emphasize cover in travelways, bedding areas, reproductive areas, and areas adjacent to water sources and openings. Cover areas will be at least 10 chains in width.
   c. Provide for hiding and thermal cover in fawning and calving areas. Restrict logging activities from May 15 to July 1 for elk and from June 15 to August 10 for mule deer.
   d. Provide for not less than 10 percent thermal cover in assessment areas. Emphasize thermal cover management in travelways, reproductive areas, and bedding areas.
   e. Provide for not less than 10 percent hiding cover in assessment areas. Emphasize hiding cover adjacent to water sources and openings, along travelways, and in pine stringers. Hiding cover shall not be less than 10 chains in width.

3. Snags and cavity, cull, and damaged trees.
   a. Provide for the following snag and other tree objectives:
      (1) Regionally consistent Standards and Guidelines apply for snag management in ponderosa pine, mixed conifer and spruce-fir cover types.
      (2) Pinyon-juniper type: not less than 100 snags et al., 9 inches and larger DRC and 12 feet in height, per 100 acres over 65 percent of the forested area.
   b. Select larger trees for retention from the following categories in sequence:
      (1) Existing snags and dying trees.
      (2) Living trees with cavities.
      (3) Trees with dead tops, spike tops, and damaged tops.
      (4) Living cull and damaged trees.
      (5) Living diseased trees, excepting mistletoe infected trees, not accounted for in 1 through 4 above.
      (6) Living healthy trees.
      (7) Avoid retention of mistletoe infected trees.

c. Intensively manage emphasis areas (forest opening edges, water sources) to meet snag et al. objectives.

4. Personal-use fuelwood standards.
   a. Ponderosa pine, Douglas fir, and spruce:
      (1) Any dead and down tree.
      (2) Any standing dead tree less than 12 inches DBH.
      (3) Any standing dead tree less than 15 feet in total height.
   b. Juniper:
      (1) Any dead and down tree.
      (2) Any standing dead tree without green foliage).
      c. Pinyon pine:
      (1) Any dead and down tree.
      (2) Any standing dead tree less than 12 inches DRC (10"DBH).
      (3) Any standing dead tree less than 12 feet in height.
   d. Gambel oak:
      (1) Any dead and down tree.
      (2) Any standing dead tree less than 8 inches in DBH.
   e. Quaking aspen:
      (1) Any dead and down tree.
      (2) Any standing dead tree less than 12 inches in DBH.

5. Turkey habitat.
   a. Leave not less than four turkey roost-tree groups per section in turkey winter range.
   b. Leave not less than two turkey roost-tree groups per section in turkey summer range.
   c. Emphasize turkey winter habitat in areas within 40 chains of pine stringers (pine stringers are defined as non-contiguous, linear communities of predominately ponderosa pine, up to 40 chains in width, that extend into pinyon-juniper woodland).
   d. Provide not less than 10 acres of untreated slash for nesting habitat within one-half mile of water. Consider slope, canopy, distribution and distance to water in the selection of treatment areas.
   e. Restrict activities in nesting areas from April 15 to July 1.

6. Peregrine falcon habitat.
   a. Prohibit activities which disturb nesting birds between March 15 and August 15. If birds arrive in their territories before March 15, suspend disturbing activities immediately. Extend this period if the birds are strongly attached to the nest site after August 15.
   b. Take all reasonable precautions, consistent with policies regarding jeopardy to human life and property, during fire suppression, search and rescue, or other emergency operations from March 15 through August 15 to protect peregrine nesting sites and their confidentiality.

7. Raptor habitat except northern goshawk and Mexican spotted owl.
   a. Retain raptor nest tree-groups and a non-activity buffer around raptor nest sites as follows:
      (1) Cooper's hawk: 7-chain buffer zone around the nest.
      (2) Sharp-shinned hawk: 6-chain buffer zone around the nest.
      (3) Bald eagle:
         (a) Provide a 10-chain uncut buffer zone around existing and potential bald eagle winter roosts.
         (b) Identify and protect foraging perches and potential roost sites.
      (4) Osprey:
         (a) Provide an 8-chain uncut buffer area around existing (occupied or unoccupied) nests.
         (b) Restrict logging activities within 20 chains of active nest sites between April 1 and August 15.
         (c) Provide, for every ten surface acres of water, not less than five acres of

mature and overmature trees with not less than four snags, with heights, equal to, or greater than, the surrounding trees, and not less than 20 inches in DBH, per acre, for potential osprey nesting sites.

(d) Provide uneven-aged and, or irregular-aged stand conditions within a 10-chain zone around aquatic areas with five or more surface-acres of water.

(e) Provide artificial nesting platforms as needed for habitat improvement.

(f) Prohibit road construction in roost areas and buffer zones.

(5) Others: 3-chain buffer zone around the nest.

8. Tassel-eared squirrel habitat.
   a. Manage for at least 40 percent of potential habitat capability for tassel-eared squirrels in assessment areas as determined by the Forest Habitat Capability Model. To maintain habitat capability, retain one nest tree group per five acres. Retain all trees within a 26-foot one-half chain radius from the nest (1/20 acre ponderosa pine only). This does not apply in regeneration areas.

9. Red squirrel habitat.
   a. Manage for at least 40 percent of potential habitat capability for red squirrels in assessment areas as determined by the Forest Habitat Capability Model. As needed to meet habitat capability, protect red squirrel primary caches at a density of one cache per two acres. Retain all trees within a 26-foot one-half chain radius from the cache (1/20 acre mixed-conifer only). This does not apply to regeneration areas.

10. Pronghorn antelope habitat.
    a. In key antelope ranges, maintain existing openings and create additional openings as provided for in Wildlife Non-structural Habitat Improvement. Provide for high forb composition (25 percent).
    b. In antelope range, remove all net wire fences; in the interim, modify every one-half mile of such fence to facilitate movement.

11. Riparian Vegetation. Riparian areas are geographically delineable areas with distinctive resource values and characteristics that are comprised of aquatic and riparian ecosystems. Riparian ecosystem is a transition between aquatic ecosystems and adjacent terrestrial ecosystem identified by soil characteristics or distinctive vegetation communities that require free or unbound water; terrestrial ecosystems characterized by hydric soils and plant species that are dependent on the water table (saturated zone) and, or its capillary zone.
    a. Inventory all riparian areas; collect data regarding location, size, classification and condition of the riparian.
    b. Maintain not less than three age classes of woody riparian species, with ten percent of the woody plant cover in sprouts, suckers, seedlings, and saplings.
    c. Maintain not less than 90 percent of the potential stream shading from May to September along all perennial cold or cool water streams. Provide shade with tree and other vegetational cover.
    d. Maintain not less than 90 percent of the potential shrub cover in riparian areas.
    e. Maintain not less than 90 percent of total linear streambank in stable condition.
    f. Woody riparian communities in addition to riparian communities which are dominated by shrub and herbaceous species are to rate in satisfactory or better condition.
    g. Select riparian areas for treatment based on relative scorecard condition rating with

the lowest rating assigned to first treatment.

**Wildlife Non-structural Habitat Improvement**

Do non-structural wildlife habitat improvement as specified in project level analysis and the following guidelines using special cutting, burning, seeding, and planting.

1. Created openings in pinyon-juniper woodland.
   a. Opening is not larger than 40 acres.
   b. The maximum width of the opening is 10 chains.
   c. The maximum sight distance within the opening is 15 chains.
   d. The minimum distance between any two openings is 10 chains.
   e. Retreat these areas by burning and seeding at 20 to 40 year intervals.
   f. Coordinate identification and planning of treatment areas with the Arizona Game and Fish Department.
   g. Protect cliffrose plants larger than 4 inches DBH or 8 feet tall to the extent possible when prescribe burning. Protect where possible during prescribe burning activities stands of cliffrose where densities exceed 100 plants per acre and plants are at least 2 feet tall.
   h. Exclude livestock from seeded areas for not less than two of three growing seasons immediately following treatment.

2. Gambel oak.
   a. Manage Gambel oak for increased hard mast production, cavities, and deciduous foliage volume to promote and enhance wildlife habitat.
   b. Retain all standing oak trees eight inches and larger at DBH.
   c. Personal and commercial cutting of oak will be done in designated areas only from May 15 to October 15 inclusive.
   d. Consider age class distribution in project planning.

3. Alligator juniper.
   a. Retain live, large alligator juniper for wildlife habitat where it occurs with ponderosa pine.

4. Quaking aspen.
   a. Treat aspen using special cutting methods.
   b. Optimum size of the treatment area is four acres although in some situations larger areas (10 acres+) can be treated.
   c. Prohibit grazing of improvement areas for not less than one growing season immediately following treatment.
   d. Remove coniferous understory during treatment.

5. Sagebrush.
   a. Periodically burn drainage bottoms dominated by sagebrush.

**Structural Habitat Improvement**

Do structural habitat improvement as specified in project level analysis and the following guidelines:

1. Install protective fences, watering structures, brush piles, road closure devices, nesting structures and pothole developments.

2. Prevent livestock access to 70 percent of the shoreline of the stock tanks that have stable water levels with the capacity to grow emergent aquatic vegetation. In addition, fence up to five acres and seed to low height cover species.

3. Provide for one permanent water source per square mile.

4. Install structures to promote recharge of wet meadows and riparian areas.

5. Construct, improve, and, or stabilize lakes to improve aquatic habitat for desirable fish species.

6. Maintain or improve nesting cover and waterfowl forage on existing waterfowl islands and shorelines and in conjunction with construction of waterfowl islands.

**Range Resource Planning**

1. Manage grazing allotments at the range management level determined on a project basis. Less than satisfactory range conditions are corrected through implementation of the range management program in the allotment management plan. Revise existing allotment management plans during first plan period. to bring permitted grazing use in line with grazing capacity on all grazing allotments by the end of the Forest Plan period.

2. Manage livestock use in riparian areas to meet riparian area objectives. This normally will be by providing adequate rest. Fence to exclude livestock from riparian areas when alternative means are not feasible. In sheep allotments, sheep will be herded and may use riparian areas on a once through lightly basis (less than 20 percent of available forage) unless the permittee is instructed to not use an area; riparian areas will not be grazed more than one time during the grazing season.

3. Prepare allotment management plans using Integrated Resource Management to implement Forest Plan resource management direction and achieve resource objectives. Allotment management planning will consider innovative livestock management practices and techniques, stocking rate adjustments and non-use agreements, and structural and non-structural range improvements to achieve integrated resource objectives.

4. Increase efforts to resolve grazing conflicts in all critical wildlife habitats to achieve resource management objectives. Consider season of use, forage improvements, deferred entry, and reductions in livestock and/or wildlife use to insure proper forage management. In areas of conflict, new winter grazing use by livestock will be allowed when such use does not adversely affect wildlife objectives. Allocate forage to (a) maximize habitat capability for threatened and endangered species and (b) provide habitat capability for indicator and harvest species in the range specified in the State Comprehensive Wildlife Plan. When determined that wildlife populations are damaging the range resource, the Forest Supervisor will advise the Arizona Game and Fish Department to address Wildlife population numbers and, or wildlife management to correct the problem.

**Range Resource Inventory**

Concentrate inventory and analysis work on problem allotments. A static or upward trend in range condition indicates a non-problem allotment. Conversely, a downward trend in range condition indicates a problem allotment. A problem allotment is also identified when other resources or activities are adversely affected by livestock management practices. Allotments are categorized as being problem or non-problem as a result of range monitoring conducted annually on all allotments. Production-utilization studies are done in conjunction with monitoring and re-analysis.

Conduct range analysis or reanalysis on all allotments with a downward trend in range condition at least one time in 5 years and on allotments with a static or upward trend in range condition at least one time in 10 years. Trend in range condition is identified through range inspection monitoring conducted annually on all

allotments. Production-utilization studies are made in conjunction with monitoring and re-analysis. In allotments where forage is determined to be limiting because of livestock-wildlife conflict, production-utilization studies will be made in all pastures of the allotment in conjunction with annual inspections. Allotments with downward trends in range condition and/or conflict for forage between livestock and wildlife have priority for inspection and analysis.

**Range Non-Structural Improvement**

1. Re-treat improved forage areas as determined in project level analysis using mechanical, chemical or fire use means and in accordance with the following guidelines:
   a. The area to be re-treated is situated on one or more of the following soil mapping units: 8, 16, 17, 18, 19, 23, 27, 30, 32, 40, 112, 162, 250, 251, 254, 255, 256, 257, 258, 260, 261, 263, 264, 272, 273, 280, 289, 502, 503, 507, 513, 514, 520, 543, 588, 590, 599, 632, 633, and 634.
   b. Opening is not larger than 40 acres excepting that in primary pronghorn antelope range.
   c. The maximum width of the opening is 10 chains excepting that in primary pronghorn antelope range.
   d. The maximum sight distance within the opening is 15 chains excepting that in primary pronghorn antelope range.
   e. The minimum distance between any two openings is 10 chains.
   f. Exclude livestock from seeded areas for not less than two growing seasons.
2. Seed stands that are (a) thinned to GSL of 60 square feet of basal area per acre, or less and (b) have a forage production rating of moderate or high to forage species following intermediate cutting as specified in project level analysis.

**Range Structural Improvements**

Replace existing and add new structural improvements needed for the prescribed management level.

**Range Improvement Maintenance**

Permittees maintain improvements as specified in the grazing permit.

**Range Administration and Management**

Administer all grazing permits annually. Make inspections on all allotments annually. Based on range studies and revised allotment management plans, adjust livestock numbers and grazing seasons to reflect actual capacity of the range. Bring permitted grazing in line with grazing capacity on overstocked for each allotment by the end of first planning the Forest Plan period.

**Timber Resource Management Planning and Inventories**

1. Complete forest inventory on all forested lands in the management area and revise on a 10-year cycle.
2. During the several phases of Integrated Resource Management, inventory, identify, and assess, in accordance with all applicable standards and guidelines, the conditions, needs, and opportunities for all resources, (e.g. wildlife habitats, old-growth, visual and scenic resources), that are present in the assessment area. Formulate, identify, and prepare, in phases 1 through 4 of Integrated Resource Management, based on the goals, objectives, and direction in this Forest Plan and appropriate public input, an integrated set of multi-resource goals and objectives for the assessment area. Assess and consider these goals, objectives, and resource values in the identification and selection of the appropriate

system of management for each stand. Formulate, consider, and evaluate all stand management systems taking into consideration various resource factors, such as, improvement of stand condition, stocking, composition, and growth; biodiversity; diversity of wildlife habitats and capability; visual quality (NZ) or SIO (SZ); ROS, and watershed condition.

**Regeneration Harvest in Coniferous Stands**

Make regeneration cuttings in accordance with project level analysis and the following guidelines:

1. Manage stands on an uneven-age basis to achieve the multi-resource goals and objectives established for each stand. Identify the capability of each silvicultural regeneration method (or methods) to secure these multi-resource goals and objectives.
2. The clearcutting method shall be applied only where insect and or disease conditions, windthrow, fire or other damaging agents leave insufficient healthy trees to form a satisfactory uneven-aged stand.
3. NZ: Stand size shall range from 10 acres to 60 acres excepting those stands assigned a visual quality objective of: (a) retention, foreground; (b) partial retention, foreground; (c) partial retention, middleground; and (d) retention middle ground for which there shall be no minimum or maximum stand size.
4. A principal goal in choosing and laying out of stands for regeneration is the improvement of diversity of stands through their arrangement and physical location in terms of the range of their relative sizes, shapes, aspects, densities, species composition, and other characteristics.
5. Do not cut any tree larger than 40 inches at DBH.
6. Ensure the species mix in the regenerated stand is consistent with the existing habitat type as defined in the R-3 Handbook on S.W. Habitat Types.
7. Harvests within the ecotone between woodlands and ponderosa pine habitat types will not be initiated unless there is reasonable assurance that regeneration of ponderosa pine will occur within five years following a regeneration harvest. The selection regeneration methods will be the preferred method of regenerating stands within this ecotone.

**Intermediate Harvest in Coniferous Stands**

Make intermediate harvests as specified in project level analysis and the following guidelines:

1. Stand size: minimum 10 acres, maximum 60 acres, typical 30 acres.
2. Make intermediate harvests to specified growing stock levels (GSL) in stands with a DMR of 2.0 or less.
3. Complete logging activities and slash treatment in one season to control *Ips* beetle populations.
4. Maximize utilization of all trees cut during intermediate harvests.
5. Do not cut any tree larger than 40 inches at DBH.
6. A principal goal is to increase and improve the diversity of timber stands through the manipulation of their arrangement and physical location in terms of their relative size, shape, aspect, density or stocking, species composition, and other characteristics. To achieve this goal, divide large stands, in accordance with item 1. above, into several smaller stands through the application of intermediate harvests by reducing stand stocking by a difference of at least 30 square feet of basal area per acre.

7. To provide for future snags requirements as specified in Wildlife Surveys, Planning, Prescriptions, Monitoring, Coop, and Administration, 3. a. (1) and (2), retain at least at least 400 live trees, 14 inches DBH and larger, per 100 acres, on 65 percent of the treatment acres in ponderosa pine stands; and at least 600 live trees, 14 inches DBH and larger, per 100 acres, on 65 percent of the treatment acres in mixed conifer stands. Select larger trees for retention from the following categories in sequence:
   a. Living trees with cavities.
   b. Trees with dead tops, spike tops, and damaged tops.
   c. Living cull and damaged trees.
   d. Living diseased trees, excepting mistletoe infected trees, not accounted for in a through c above.
   e. Living healthy trees.
   f. Avoid retention of mistletoe infected trees.

**Silvicultural Examination and Prescription**

Complete stand delineation, mapping, vegetative and condition class typing, and acreage assignment for all lands in the management area. Maintain ADP stand information system. Apply standards and guidelines on an assessment area basis (approximately 10,000 acres), rather than on an individual timber sale basis, to ensure distribution of habitat components throughout the range of dependent species. Improve stand diversity and habitat for wildlife through integrated resource management on lands allocated to timber or fuelwood production.

**Reforestation**

Do reforestation as specified in project level analysis and the following guidelines:

1. Prepare forest floor for regeneration, following regeneration cutting, with broadcast burning or other means, prior to first good cone crop.
2. Make stocking surveys four and seven years following site preparation.
3. Make plantation survival surveys one, three, and five years following planting.
4. Satisfactory stocking is 120 to 350 trees per acre depending on, species, site class, and management objectives (Reference: FSM 2470).
5. Protect plantations until seedlings are established and assign no grazing capacity.

**Timber Stand Improvement**

Make precommercial thinnings as specified in project level analysis and the following guidelines:

1. Complete timber stand improvement evaluation survey within one year following treatment.
2. Limit cutting to July through December in areas where *Ips* bark beetle problems are likely to occur.
3. Complete logging activities and slash treatment in one season to control *Ips* beetle populations.
4. Maximize utilization of all trees cut during intermediate harvests.

**Timber Sale Preparation**

Make commercial timber, pulpwood, commercial and personal-use fuelwood, and miscellaneous forest product sales in accordance with project level analysis and the standards and guidelines for Wildlife Non-Structural Habitat Improvement, Regeneration Harvest in Coniferous Stands, Intermediate Harvest in Coniferous Stands, Improvement, and, for the NZ, Recreation Planning (Visual Management). Make coniferous residue from commercial sale areas available for personal-use fuelwood.

Utilization standards:

1. Sawtimber: 9-inch d.b.h. + to 6-inch d.i.b. top.
2. Pulpwood: 5-inch d.b.h. + to 4-inch d.i.b. top.
3. Fuelwood: Sizes vary by objectives.

**Timber Harvest Administration**

Administer timber sales, pulpwood sales, permits for forest products, firewood, and miscellaneous forest products sales. This activity includes accountability, financial management, field inspections, and contract interpretation and enforcement. Close local terminal roads until the next entry by signing and physical obstructions such as gates or barriers. Obliterate temporary roads and return to production. Impose ORV restrictions until revegetated.

**Nursery Management**

Maintain a 10-year supply of seed from each zone for each species.

**Genetic Forest Tree Improvement**

Implement the Regional Tree Improvement Plan.

**Improvement**

Implement land treatment and structural measures in accordance with project specific analysis and the following guidelines. Land treatment measures are (1) closure and revegetation of system roads identified for obliteration in the transportation inventory; and (2) ground cover improvements in the following soil mapping units: 8, 12, 16, 17, 18, 19, 27, 30, 32, 40, 162, 165, 250, 251, 254, 255, 257, 258, 260, 261, 263, 264, 272, 273, 280, 281, 288, 289, 502, 503, 507, 513, 514, 520, 542, 543, 587, 588, 590, 592, 599, 632, and 634.

1. Created opening is not larger than 40 acres.
2. Maximum width of the opening is 10 chains.
3. Maximum sight distance within the opening is 15 chains.
4. Minimum distance between any two openings is 10 chains.
5. Exclude livestock from treated areas for not less than two growing seasons.

**Administration**

Through the use of best management practices, the adverse effect of planned activities are mitigated and site productivity is maintained. These practices are determined (after problem assessment, examination of the alternatives and appropriate review by local or State agencies and public participation) to be the most effective practicable means of preventing or reducing the amount of pollutants generated by non-point sources to levels compatible with water quality goals. These practices are involved in activities affecting the Forest and grassland resource and include:

1. Install water control structures and, or intercede on poor and very poor condition ranges where revegetation potential is moderately high to high on slopes less than 40 percent.
2. Designate stream courses in timber sale planning to protect watershed values. Include in this protection control on skidding in riparian areas and along or across designated stream courses.
3. Rehabilitate areas impacted by wildfire to minimize loss of site productivity.

**Processing of Mineral Exploration Proposals**

Impose the following operating constraints on leasable and locatable mineral prospecting and exploration activities to maintain wildlife habitat components and visual and special resource objectives:

1. Restrict use and occupancy within one-quarter mile of breeding, calving and fawning areas from May 15 to August 10.
2. Restrict use and occupancy within one-quarter mile of raptor nest sites and permanent waters from April 1 to August 15.
3. NZ: Prohibit surface use and occupancy in the visible foreground of Highway 67, and Highway 89A from May 1 to October 31.
4. Restrict surface use and occupancy yearlong

in the foreground of heritage resource sites with National Register status.

**Processing of Oil and Gas Lease Applications**

Incorporate the following limited surface use stipulations in oil and gas leases:

1. Prohibit surface occupancy yearlong in recreation, administrative and special use sites.
2. Restrict use and occupancy yearlong on slopes of 15 percent or greater to prevent loss of soil productivity and vegetative cover.
3. Prohibit surface occupancy yearlong in the foreground of all sites listed on the National Register to protect historic values
4. Require replanting of areas impacted by operations in tree plantations at the cessation of project.
5. Restrict use and occupancy yearlong in areas supporting populations of Threatened and Endangered and sensitive plants.
6. Restrict use and occupancy within one mile of Threatened and Endangered raptor nest sites from March 1 to August 15.
7. Prohibit surface use and occupancy in the visible foreground of Highway 67, and Highway 89A from May 1 to October 31.
8. Prohibit use and occupancy within one-quarter mile of turkey and raptor nest sites from March 1 to July 30.
9. Prohibit use and occupancy within one-quarter mile of breeding, calving and fawning areas from May 15 to August 10.
10. Restrict use and occupancy yearlong within one-quarter mile of permanent water sources to allow unrestricted access to water sources.

Discontinue common variety mineral material disposals from existing sources, rehabilitate existing material pits and prevent development of potential sites in:

1. NZ: The visible foreground of Highway 67 and Highway 89A.
2. Within one-quarter mile of turkey and raptor nest sites and permanent water sources.
3. NZ: Areas with semi-primitive or semi-primitive motorized recreation opportunity spectrum classifications.

**Processing of Site Specific Mineral Development Proposals**

Evaluate transportation proposals for mineral development based on:

1. Integration with other resource management uses.
2. Avoidance or mitigation of impacts on wildlife habitats including breeding, calving and fawning areas, primary big game foraging and cover areas, turkey nesting and roost areas, and important aquatic habitats.
3. NZ: Impacts on visual quality objectives.
4. Impacts on areas of concentrated recreation use.
5. NZ: Avoidance or mitigation of impacts on areas with recreation opportunity spectrum classifications of semi-primitive and semi-primitive motorized.

Prohibit the construction of mine and oil and gas well surface facilities in the following areas:

1. NZ: In the visible foreground of Highway 67, and Highway 89A.
2. In the foreground of heritage resource sites with National Register status.

Evaluate the need for the creation or development of areas with substitute or surrogate habitats, facilities and structures to replace areas of substantial loss or destruction from mineral activities.

**Special Use Management (Non-Recreation)**

Allow expansion of existing major utility corridors and clearing of new corridors (refer to Corridor Map for location of major utility corridors). Attempt to avoid the following areas:

1. NZ: Areas with pristine, primitive or semi-primitive recreation opportunity spectrum classifications.
2. Areas with high heritage resource values.
3. Important wildlife habitat areas.
4. NZ: Visually sensitive areas.
5. NZ: ORV closure areas.
6. Lands classified as suitable timberland.

Provide for joint use in corridors and combine uses to the extent possible in light of technical and environmental constraints.

The following standards and guidelines apply to all classified electronic sites:

1. Maximize the number of compatible electronic uses on a minimum site area. If a proposed use can be accommodated on a site, but is incompatible with installations in existing buildings, additional buildings may be authorized. Additional buildings are subject to the same joint-use stipulations that apply to existing structures. The Forest Service reserves the right to issue a prospectus for the construction of any building on-site.
2. Each non-exclusive permit reserves the right of the Forest Service to authorize other uses on the site, building, or antenna structures of the holder provided that such use does not interfere with holder's operations. Permittee improvements so used are entitled to reasonable compensation.
3. The Forest Service determines the combination of joint occupants, location of permittee improvements on site and the compatibility of users. Each proposed use is evaluated based on consideration of its impact on existing uses, potential future uses and demonstrated need.
4. Access development, improvement and maintenance shall be borne by a permittee or permittee association and must be authorized by a separate permit.
5. A Federal Communications Commission (FCC) license is required for all non-federal government permittees. Authority for enforcing the terms of an FCC license is vested in the FCC. Applicants are responsible for resolving interference problems with existing users. Within the terms of special-use permits and applicable regulations, the Forest Service reserves the right to determine which special-use permits or proposals must be terminated or denied when interference problems cannot be resolved.
6. NZ: Buildings and antennas are subject to painting, design and location requirements imposed by the Forest Service to meet visual quality objectives.
7. Permittees are required to organize and be members of a site users association.

**Right-of-Way Grants for Roads and Trails**

Conduct annual field inspections of all special use permits and right-of-way grants. Review permit files annually for payment of fees, termination dates and adequacy of permit clauses. Adjust fees based on fair market value at five year intervals or when permits or grants are reissued. Update land use reporting system during annual file reviews.

**Land Exchange**

Refer to Land Adjustment Map for location of lands identified for disposal and acquisition.

Evaluate land exchange proposals in the Tusayan area with these additional criteria:

1. Consideration of State and Grand Canyon National Park management objectives for the Grand Canyon.
2. Contribution to coordinated community development.
3. Social and economic impacts on other communities dependent on Grand Canyon tourism.
4. Support of the Coconino County Planning and Zoning Commission with necessary zoning changes.

5. Forest Service and Coconino County review of detailed development plans submitted by the proponent as part of the land exchange proposal.

On lands designated as base-in-exchange:

1. Limit capital investments in range structural or non-structural improvements, recreation improvements, administrative improvements, or timber stand improvements, etc., to those that can be amortized during the anticipated period of continued government ownership.
2. Design cultural practices, such as timber sales, to protect or enhance real estate values by modifying marking prescriptions to retain a component of mature trees, ensuring timely disposal of activity slash and in designing location of permanent roads.
3. Avoid, where possible, the authorization of encumbering special uses that detrimentally affect real estate values and, where possible, locate those that must be accommodated in a manner to minimize impacts to the value of real estate.

**Land Acquisition**

Attempt to acquire the Bull Basin private land tract adjacent to Kendrick Mountain Wilderness, the Sunflower Flat, and the Tule private land tracts by purchase or exchange to reduce potential for encroachment of non-conforming uses. Acquire key wildlife areas such as riparian areas through acquisition authorities.

**Rights-of-Way Acquisition**

Carry out site-specific analysis to determine whether to acquire the rights-of-way specified in Table 14.

**Transportation System Planning and Inventory**

1. Identify and obliterate all system roads not required for resource management in accordance with the Management Direction for Soil and Water Resources.
2. Close local terminal roads to traffic until the next entry with signing and, or physical obstructions e.g. gates and barriers.
3. Obliterate all temporary roads and return to production.
4. Restrict off-road vehicle use of closed and or obliterated roadways to facilitate revegetation of the roadway.

**Road Operation**

Road maintenance standards are:

1. Maintain commensurate share roads for intended commercial use.
2. Maintain local roads, closed to traffic, at maintenance level 1.
3. Maintain local service roads, open to traffic, to at least a maintenance level 2.
4. Maintain arterial and collector roads at maintenance level 4 or 5.
5. Maintain signs with routine maintenance and replacement schedule based on inventory and field inspection.
6. Maintain local service roads with more than 50 ADT, and to dispersed recreation sites, at maintenance level 3.
7. Replace surfacing at the rate of five percent per year.
8. Re-establish drainage and subgrade stabilization at the rate of two percent per year.

**Fire Management Planning and Analysis**

1. Do not allow fires to spread to lands of other ownership.
2. Protect human life and improvements.

**Escaped Fire Suppression**

Fires which exceed, or are expected to exceed, the size objective for the Management Area are considered escaped and appropriate response is determined by a Wildland Fire Situation Analysis (WFSA). The WFSA will consider at least the

following:

1. The resource management emphasis of threatened management areas.
2. Suppression costs commensurate with resources protected.
3. Effects on air quality, aesthetics, soil, and watershed.
4. Social acceptance of acreage burned.
5. Current availability of suppression resources.
6. Size objectives are based on continuous area of high intensity burn.
7. Impacts on heritage resources.

**Treatment of Activity Fuels**

NZ: All activity created fuels are promptly removed from areas designated with visual management objectives of "retention foreground" or "partial retention foreground" (VQO Map).

Activity created fuels in other areas are treated so that maximum size objectives can be met under the burning conditions which yielded the historical, 50 percentile rate of spread in fuel model "K" (National Fire Danger Rating System).

Fuel treatment objectives are met with a combination of treatment methods. Preferred treatments are: (1) fuelwood utilization, (2) broadcast burning (prescribed fire and wildland fire use), (3) pile and burn, and (4) mechanical rearrangement such as chipping and lopping.

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