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Assessment Report of Ecological / Social / Economic Conditions, Trends, and Risks to Sustainability, Cibola National Forest Mountain Ranger Districts

Executive Summary of Key Findings

Cibola National Forest Mountain Ranger Districts Assessment

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ABSTRACT: The Assessment presents and evaluates existing information about relevant ecological, economic, and social conditions, trends, and risks to sustainability and their relationship to the 1985 Cibola Forest Plan, within the context of the broader landscape.

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Executive Summary of Key Findings from the Assessment Report of Ecological/Social/Economic Conditions, Trends, and Risks to Sustainability, Cibola National Forest Mountain Ranger Districts

These key findings are brief summaries based on analyses of conditions, trends, and risks to sustainability associated with the 15 resource topic areas required by the 2012 Planning Rule to be addressed in the Assessment Report. These topic areas The key findings presented were shared with Cibola's interested public through a series of public meetings held at various locations on the mountain ranger districts. The conditions, trends, and risks to sustainability reported by the assessment for these resources inform the needs for change to the 1985 Cibola Forest Plan. Needs-for-change statements are currently being developed collaboratively with the public by comparing conclusions on conditions, trends, and risks from the respective topic areas of the assessment with the plan direction of the 1985 Cibola Forest Plan. Needs-for-change statements will be published in a *Notice of Intent* to develop a draft revised forest plan and alternatives and analyze their respective effects in a draft environmental impact statement.

The key findings from the assessment follow in executive summary.

Vegetation, Soils, Carbon Stocks, and Air Quality: Vegetation of all major vegetation types on the Cibola are departed from reference condition. Historical timber harvest, livestock grazing (removal of fine fuels), and fire suppression are largely responsible for decreased fire frequency, increased fire severity, and the resulting overall decrease in large trees and increases in early seral (grass/forb/shrub, seedling/sapling) stands and closed canopies in forests and woodlands. Three riparian vegetation types are at risk from an invasive species (saltcedar), while threats from forest insects and disease are limited primarily to Douglas-fir and pinyon pine. The soil resources of most vegetation types (about 84 % of the Cibola acreage) are at risk, including two vegetation types (Pinyon-Juniper Woodland and Pinyon-Juniper Evergreen Shrub)—almost 20% of the Cibola acreage—that are at high risk. Carbon stocks are largely stable or improving, as are most measures of air quality.

Water Resources and Watersheds: Water resources within the Plan area support a wide variety of ecosystem features. There are 6204.4 miles of mapped stream channels within the Plan area of the Cibola National Forest located within 205 sub-watersheds. Of these, 24.8 miles are perennial located in 15 sub-watersheds, with the rest of the watersheds supporting only intermittent and ephemeral streams. There are 367 mapped springs, unevenly distributed across the Plan area. These features are associated with 7569 acres of mapped riparian areas, mostly of the cottonwood shrub type. Many of these features are at risk due to water uses, roads, trails, recreation, herbivory, and legacy (pre-Forest Service administration) effects. The Plan area provides water that recharges many of the regional aquifers in addition to supporting water resource features within the Plan area. Groundwater withdrawals are greatest outside the Plan area, where some aquifers are being depleted. Most sub-watersheds are functioning properly, but there are concerns on impacts from some poorly located roads and trails, soil condition, and fire regime. Water within the Plan area is important for providing water to sustain the ecological, economic, and cultural values of surrounding areas.

Federally recognized and species of conservation concern: Federally recognized and species of conservation concern:

Federally recognized and species of conservation concern were identified and evaluated for the Cibola National Forest Mountain Districts. A total of 9 federally recognized species were determined to be relevant to the Plan Area. Of the 9, 4 are endangered. The 9 consist of 1 mammal, 4 birds, 1 fish, 1 amphibian, 1 invertebrate, and 1 plant. Species of conservation concern were determined following guidance in the proposed directives issued for the 2012 Planning Rule. Wildlife and plant species identified as at-risk by a number of different entities including NatureServe, the New Mexico Department of Game and Fish, New Mexico State Forestry, the U.S. Forest Service Southwest Regional Forester, and any tribes in the area were considered for inclusion. Those species which met the initial requirements, had been documented on the Cibola since 1998, and had the potential to be affected by Forest Service management activities were identified. Historic, current, and future trend statuses for each species population and associated habitat type, as well as any other specific threats either directly to the species or to special habitat features not captured in the habitat analysis, were used to calculate an overall risk assessment to each species. A total of 17 species of conservation concern were determined to be at risk by current Forest Service management activities and included 4 mammals, 10 birds, 1 amphibian, 1 invertebrate, and 1 plant.

Cultural and Heritage Resources: The plan area features Native American (American Indian) cultural and historic resources and uses dating to the past 12,000 years, and resources and uses associated with Euroamericans and others for the past 400 years. The plan area features significant historic properties that date to the Archaic, ancestral and early modern Pueblo, Spanish colonial, and American eras. Seventeen federally recognized tribes and 19 Spanish and Mexican Land Grants are adjacent to or in the vicinity of the plan area. Contemporary cultural resources and uses of the plan area are associated with Native American, Hispanic, and Anglo-American communities in the vicinity of the plan area. The resources and uses of the plan area are largely intact and stable, but they are threatened by vandalism and looting, development in the urban interface, and climate change. The cultural and historic resources and uses of the plan area are critical to the social, economic, and ecological sustainability of the plan area, the southwestern region, and the nation.

Areas of tribal importance: The Cibola National Forest maintains a governmental relationship with seventeen federally recognized Indian tribes, and routinely consults with these tribes on policy development, and plans, projects, programs, or activities proposed on the Forest that have a potential to affect tribal interests or natural or cultural resources of importance to the tribes. Lands managed by the Cibola National Forest have been used, and continue to be used by many tribes for a variety of traditional cultural and religious activities. Places and properties valued and used by the tribes for a variety of purposes have been identified on every ranger district of the Cibola National Forest. To date, approximately 40 locations of cultural and religious significance have been identified forest-wide. Many of the tribes also rely upon the National Forest for forest products, for personal, commercial, and ceremonial use.

There are a number of conditions and trends that are societal and/or economic based that are influencing tribal use of the Forest and affecting area of tribal importance. These include: change in land ownership, access to land and resources, degradation of forest health and watershed conditions, changing technology, energy development, population growth, urban pressure, expanding recreation use, development of

private land, and management activities on sacred places. These trends could pose a risk to tribal use of the Forest as is practiced at this time.

Social, Cultural, and Economic Conditions: The four mountain ranger districts of the Cibola reside in 10 counties in central and western N.M. and thus, these counties are considered the primary areas of influence (AoI).

With regard to race and ethnicity, Magdalena RD and Mt. Taylor RD AoI counties are predominantly white and non-Hispanic, while Sandia and Mountainair RDs AoI counties are predominantly white but nearly evenly divided between Hispanic and non-Hispanic white. Mt. Taylor has by far the highest American Indian population of all RD AoIs, but Sandia and Mountainair RD AoIs also have significant American Indian populations. The Sandia and Mountainair RD AoIs have by far the highest African American and Asian or Pacific Islander populations.

Over one million people live in Cibola's AoI, with Sandia and Mountainair RD AoIs having the largest populations. A strong majority of the population in the Forest AoI is between the ages of 15-64, but the number of people ages 65 and over is increasing, and this trend is expected to continue, with corresponding decreases in youth and working-age groups.

Levels of education are increasing in all RD AoIs, with the levels highest in Sandia RD AoI and the lowest in the Mt. Taylor AoI. Unemployment has increased in the Sandia RD AoI recently and has been higher than other RD AoIs. Unemployment has also been a concern in the Mt. Taylor RD AoI, but these trends are lessening as recovery from the Great Recession ensues. However, much of the reduction in unemployment is a result of the size of the work force than job creation.

The economies of the Cibola's RD AoIs differ greatly based on their different urban and rural characters and population densities. Economic contributions of the Cibola National Forest mountain districts are estimated to be in excess of 1,570 jobs and nearly \$63 million dollars.

All RD AoIs have substantial wildland-urban interface (WUI). Mt. Taylor RD AoI has the largest WUI area, while Bernalillo County in the Sandia RD AoI has the highest density of homes in the WUI of all 10 counties in Cibola's AoI.

Demands for ecosystem services provided by the Cibola are anticipated to change over the life of the future plan based on anticipated changes in age structure of the population served, level of education, unemployment, and the changing mix of urban/rural influences.

Multiple Uses:

Timber and Special Forest Products: Recent timber management has focus upon fuel reduction in the WUI and non-WUI areas of the Forest. Firewood sales are about two thirds of the average annual harvest of 16,645 CCF (hundred cubic feet) over the last decade. Most prescribed cuttings are subsidized, and wood products are often collateral outputs of restoration projects that seek to achieve a desired distribution of tree size classes, reduce the risk of catastrophic wildfire, improve wildlife habitat, and provide resistance and resilience to negative effects of system drivers and stressors. Thirteen collaborative forest restoration program (CFRP) projects are currently occurring on the Cibola, treating nearly 138,000

acres. Milling and manufacturing capacity within the plan area AoI has declined drastically since the 1990s, and the Cibola is working with local communities and partners to rebuild capacity and encourage restoration businesses in order to expand forest restoration activities. Currently, only four mills exist within the plan area, and three more are somewhat near the plan area.

Range and Grazing: The amount of grazing permits and allotments, as well as the maximum permitted forage consumption, has remained relatively stable over time. However, annual authorized livestock numbers for grazing on the mountain district allotments can vary substantially due to precipitation patterns and yearly forage production. Livestock management on national forest lands has shifted to an adaptive management philosophy that allows timely changes to be quickly made in response to changing conditions involving changes in forage production, utilization levels, precipitation patterns, and water availability. Since 2006, the number of authorized livestock has averaged about 85 percent of the number permitted due to drought-related issues such as reduced forage production or lack of livestock water.

On a landscape scale, the current range conditions are considered to be satisfactory on the mountain districts, based on data collected for annual inventory and monitoring to comply with the 1985 Cibola Forest Plan monitoring requirements. A satisfactory rating is determined when the long-term trend in vegetation and soil conditions is meeting or moving toward the desired ecological condition. This is based on ecological similarity of vegetation and soil conditions to site potential.

Domestic livestock grazing on the forest has not been found to be a major contributor to the spread of invasive plants within affected range allotments. The overall trends indicate that human activity along roads, trails, and recreation areas, along with disturbance at oil and gas well pads and the movement of seed or other vegetative propagates by water along riparian corridors, are the main transportation vectors at this time. However, this human activity can include the hauling of livestock on trailers, which could contribute to the spread of invasive species if the vehicle travels from an infested area or drives through an infested area. Livestock permittees are not allowed to feed hay to their livestock on National Forest System lands, which could be a potential source of new infestations if allowed.

Fish, Wildlife, and Plants: A large number of fish, wildlife, and plant species that inhabit the Cibola are enjoyed and used by the public for a wide range of activities including hunting, fishing, wildlife-watching, forest products, education, and medicinal and ceremonial purposes. Hunting and wildlife-watching likely are the most economically important activities on the Cibola, but some forest products such as pinyon nuts can also generate revenue. While most of the species assessed are currently stable, many are associated with vegetation types that are in departure and therefore may be at risk in the future.

Recreation: The Cibola's extensive geographic range provides a diversity of recreational settings and opportunities for users from near and far. Outdoor recreation is important across all ranger districts with use generally heaviest near urban centers. Increasing demand for competing and conflicting recreational activities is taxing the Cibola's ability to manage use and meet visitor expectations. Recreation areas exceeding design capacity may impact user experience as well as cause resource degradation.

The Cibola has more miles of trail than it has been able to maintain, resulting in a persistent maintenance backlog, undesirable impacts to natural and cultural resources, and conflicts among different user groups. As appropriated funds remain flat or decline, the Cibola is increasingly turning to external resources (volunteers, partners, other agencies) to help ensure the sustainability of its trail system.

Several recent uncharacteristic wildfires and insect and disease outbreaks on the Forest have diminished the quality of recreational settings, opportunities, and scenic character. In addition, atypical weather patterns are creating warmer, dryer winters that shorten or eliminate the season of use of winter recreation. Facilities and scenery may be threatened by wildfires and recreation areas closed due to unsafe conditions.

Scenery: The 1985 Cibola Forest Plan sets forth visual quality objectives for scenic resources. These were derived using the visual management system approach, a system that has been replaced agency-wide by the science-based Scenery Management System. This system identifies the value people place on the landscape and integrates scenery into management activities. Threats to scenery include uncharacteristic wildfire, insects and disease, and human modifications such as mining activities or wind and solar farms.

Designated Areas: There are 4 wilderness areas on the mountain districts. The Cibola currently has three designated or proposed critical habitats, seven eligible wild and scenic rivers, one Research Natural Area (RNA), and one national scenic trail. There are numerous national monuments, national historic landmarks, and scenic byways within the administrative boundary of the Cibola plan area or adjacent to it. Additionally, there are several areas specially designated by congressional action: T'uf Shur Bien Preservation Trust Area (Sandia RD and Sandia Pueblo), Langmuir Laboratory for Atmospheric Research (Magdalena RD), and a military withdrawal area (Sandia RD). Some of the 13 inventoried roadless areas or portions thereof, and other unroaded primitive areas on the mountain districts may be potentially suitable for wilderness consideration or administrative designation such RNAs or special areas.

A collaborative inventory and evaluation process currently being undertaken with forest users and the interested public will help the Cibola determine which, if any, areas potentially suitable for wilderness consideration should be carried forward as environmental impact statement alternatives for analyses. The identification and evaluation of lands that may be suitable for inclusion in the National Wilderness Preservation System, and the determination to recommend any lands for such designation is not without controversy. Concerns with recommending lands for wilderness designation include less flexibility to manage the land and resources and in particular to conduct active restoration activities, economic hardships on the local community, loss of motorized access and motorized recreation opportunities, and unintended impacts to natural and cultural resources. Loss of rare habitat, rare plants or rare wildlife species, increased habitat fragmentation, and degradation of areas of scenic beauty are among the concerns related to not recommending areas for wilderness designation. The Cibola will continue to collaborate with publics representing diverse perspectives on this and other issue throughout forest plan revision. Further, the Forest encourages local community leaders, members of the public who support wilderness designation and those who support no additional wilderness designation to work together to develop balanced proposals and recommendations that will assist the Cibola in the wilderness evaluation process.

Infrastructure: All of the bridges on Cibola NFS lands are in good or fair condition, most were constructed in the 1950s and 1960s and will likely begin to deteriorate in the near future. The aging of these structures is a future threat to the sustainability of the Cibola NFS road system. Travel analyses have helped offset declines in appropriated road maintenance funding by reducing the size of the transportation system through road closures or decommissioning. Disinvestment of roads to a lower level of maintenance has also helped mitigate declining appropriations. Several water systems developed for

recreation facilities have gone dry and become non-productive as a result of prolonged drought. Deferred maintenance costs of wastewater systems forest-wide are continuing to increase because of continued deterioration of the systems and their tendency to be overlooked for maintenance due to subsurface location.

Land Status and Ownership, Use, and Access:

Federal ownership is substantial in all 10 counties in the area of influence of the ranger districts and exceeds the area of private lands in four counties. However, not all federal ownership is attributable to the Cibola. Nevertheless, in Bernalillo, Cibola, McKinley, Socorro, and Torrance Cos. the Cibola has considerable holdings, which has implications for the types and amounts of access and resource management activities desired by local communities. Nine of the 10 counties in the Area of Influence have comprehensive land use plans, which in some cases contain county expectations for coordination of uses between private landowners and USFS which are in conflict with federal law, regulation, or policy. A notable trend of loss of access to Cibola NFS lands has developed as a result of unwillingness of many private landowners to allow public access across their property to NFS lands, and new landowners are often reluctant to allow public access across their property.

On the Sandia RD, a 19,749 ac. military withdrawal area is jointly administered by U.S. Forest Service, U.S. Air Force, and Dept. of Energy. The area is closed to public entry and use, but management emphasis under current plan direction is to improve wildlife habitat diversity and decrease the threat of escaped wildfire. On the Magdalena RD, a 30,606 ac. management area is dedicated to the Langmuir Research Site for atmospheric and astronomical research. The area is primarily managed to preserve conditions necessary to meet the research needs of the Langmuir Lab. Land management emphasis is on dispersed recreation and wildlife habitat for federal and state listed species, with lesser emphasis on timber management and providing firewood for personal use.

The 13 inventoried roadless areas on the 4 mountain districts have restrictions on new road construction or reconstruction and thus, motorized access is limited. Motorized trails are allowed, however, if designated on a MVUM, and these trails provide access by motorcycles or motor vehicles of a defined width

Community wildfire protection plans have increased forest-wide as adjacent at-risk communities have responded to an increasing trend of uncharacteristic wildfire. Residential development has increased adjacent to many Forest boundaries. There is a trend of increased recreational use of Cibola lands on all RDs, and increased demand for military training exercises on three districts. Demands for exploratory mining, grazing, research special use permits, well drilling, and CFRP projects are increasing on individual districts.

Minerals and Energy:

On the mountain ranger districts, the Cibola hosts some important mineral occurrences. In particular, extensive uranium deposits are known to exist on Mt. Taylor District in what is known as the Grants Uranium Mining District. Although its mining and use is controversial, uranium is considered an alternative fuel source because nuclear power generation does not emit greenhouse gasses. Small uranium deposits exist on other districts, but no mining activity is currently ongoing. Magdalena district may

experience some exploratory drilling for uranium as its market price increases, and interest in small-scale prospecting for gold may increase as its price increases. No leasable minerals (oil or gas) are known to occur on the Mountain districts. Coal is present in limited amounts on the Mt. Taylor district, but there is no potential for developing this resource further. Oil shale or oil sands are not known to be present on the Cibola.

Regarding implications for sustainability, minerals themselves are not a sustainable forest resource. Once a mineral resource is removed, it is no longer available. However, a major function of the Minerals Program is to insure that reclamation of surface resources impacted by mining is completed to the extent possible. The restoration of areas that have experienced mineral activity impacts is an obvious contribution to the sustainability of other forest resources.

On the Cibola, there is no potential for hydropower, and there are no developed geothermal resources; however, future improvements in technology may make areas around the Mt. Taylor volcano feasible for the use of geothermal power. The Cibola has the potential for solar and wind energy production but no facilities or utility corridors currently exist to capture and transmit these power sources. The Forest has been approached with applications for wind farm and major utility corridors but the facilities have eventually been located off of the Cibola.

Integration of Key Findings:

Clearly, there are linkages between the conditions of the Cibola's primary ecosystem services such as vegetation, soil, water, air and wildlife (assessed in Volume I) and the social, economic, and cultural uses and benefits enjoyed by the public (assessed in Volume II). For example:

- The many diverse forms of recreational activities pursued by users on the Cibola are greatly dependent on the health of the primary ecosystem services that sustain them. The findings from the assessment that all of the vegetation communities on the Cibola are departed from the natural range of variability typical of those communities pose a threat and risk to many recreational, scenery-related, traditional, and cultural uses of the forest, because of the increased likelihood of ecological stressors and drivers such as uncharacteristic wildfire, insect and disease outbreaks, and vulnerability to changing climatic conditions. Habitats of wildlife and fish species and rare plants are also put at risk as a consequence of conditions and trends pertinent to vegetation communities, soils, and water resources.
- Equally important, changing demographics of forest users such as population, age, race and ethnicity, education, employment, and poverty have substantial impacts on how the forest is used and impacts to the forest's resources across all mountain districts. These changing demographics, coupled with new, popular, and affordable or economically feasible technologies, both recreational and industrial (e.g., mining), sometimes result in competing and conflicting demands upon the forest's natural and cultural resources.
- The assessment findings clearly indicate that the ecosystem services provided by the Cibola, whether cultural, supporting, provisioning, or regulating, are becoming increasingly valuable as these same services become less available off the forest, and as such, the social and economic contributions of the Cibola to its 10-county area of influence, the region, and even the nation are becoming increasingly important.