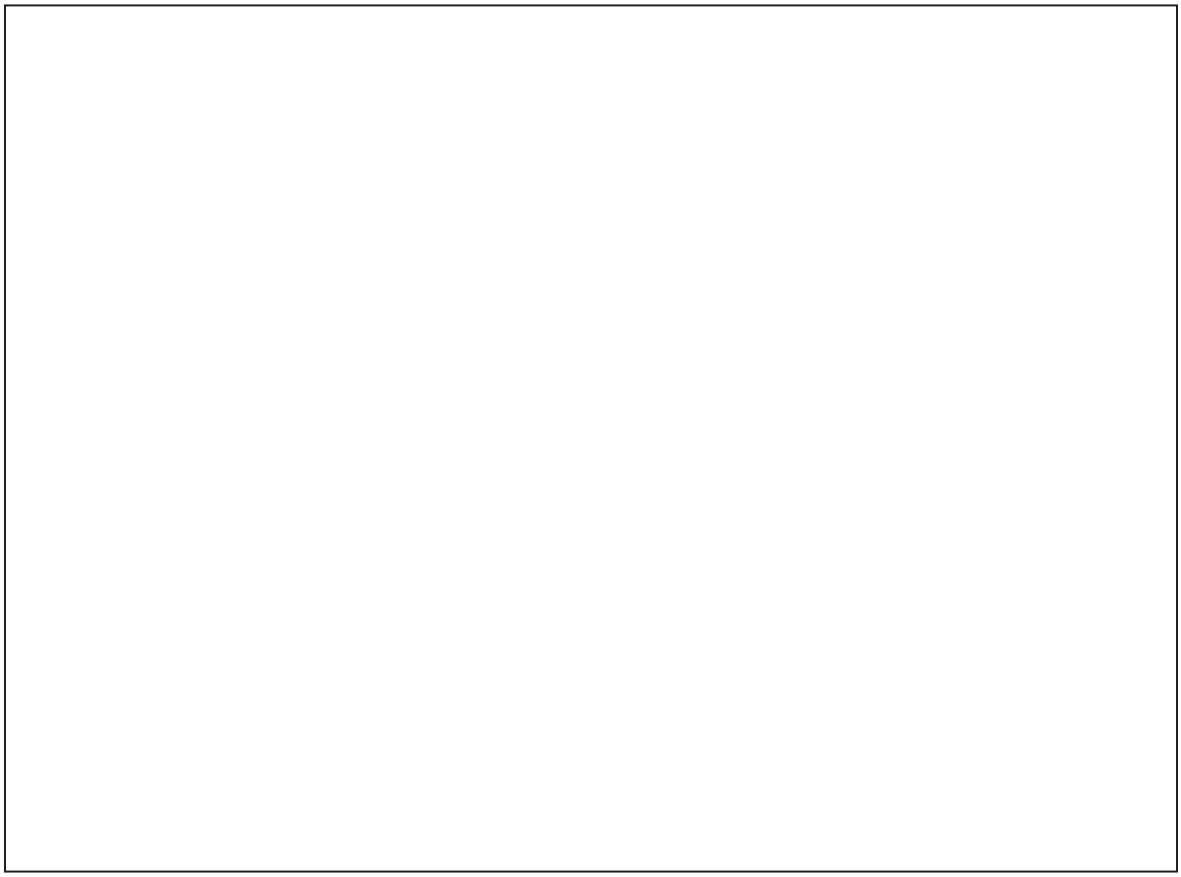
United States Department of Agriculture

Preliminary Draft Proposed Land and Resource Management Plan for the Carson National Forest [Version 2]

Rio Arriba, Taos, Mora, and Colfax Counties, New Mexico



Forest Service Southern Region Publication No. December 2017

Summary of Comments on Preliminary Draft Forest Plan

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Preliminary Draft Proposed Land Management Plan
for the
Carson National Forest

Rio Arriba, Taos, Mora, and Colfax Counties, New Mexico

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List of Commonly Used Acronyms

AML	appropriate management level
AOI	annual operating instructions
APHIS	Animal and Plant Health Inspection Service
BASI	best available scientific information
BLM	Bureau of Land Management
BMP	best management practice
CDNST	Continental Divide National Scenic Trail
CFR	Code of Federal Regulations
CFRP	Collaborative Forest Restoration Program
CSU	controlled surface use
CWD	coarse woody debris
CWPP	County Wildfire Protection Plan
DBH	diameter at breast height
DOI	Department of Interior
EPA	Environmental Protection Agency
ERU	ecological response unit
ESA	Endangered Species Act
FSH	Forest Service Handbook
HFRA	Healthy Forest Restoration Act
HUC	Hydrologic Unit Code
IPM	integrated pest management
MDP	master development plan (ski areas)
MIST	minimum impact suppression techniques
ML	maintenance level
MMCF	million cubic feet
MOU	memorandum of understanding
MVUM	motor vehicle use map
NAAQS	national ambient air quality standards
NEPA	National Environmental Policy Act
NF	National Forest
NFMA	National Forest Management Act
NFS	National Forest System
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NM	New Mexico
NMAAQS	New Mexico ambient air quality standards
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department

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NMED-AQB	New Mexico Environment Department, Air Quality Bureau
NPS	National Park Service
NRHP	National Register of Historic Places
NRV	natural range of variation
NSO	no surface occupancy
OHV	off-highway vehicle
OVUM	over-snow vehicle use map
PM	particulate matter
RAM	rapid assessment methodology
RD	Ranger District
RGCT	Rio Grande cutthroat trout
ROS	Recreation Opportunity Spectrum
SCC	species of conservation concern
SMS	Scenery Management System
TCP	traditional cultural properties
TES	Terrestrial Ecosystem Survey
TEU	terrestrial ecosystem unit
TMDL	total maximum daily load
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	US Fish and Wildlife Service
WCF	Watershed Condition Framework
WNS	white-nose syndrome
WUI	wildland-urban interface

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Forest Plan Purpose and Framework

Purpose of the Forest Plan

The forest plan guides the Carson NF in fulfilling its stewardship responsibilities to best meet the current,future and historic use needs of the American people. This plan provides forest-specific guidance and information for project and activity decision making over the plan period, generally considered to be 10-15 years. It provides the vision, strategy, and constraints that guide integrated resource management, provide for ecological sustainability, and contribute to social and economic sustainability on the Carson NF and the broader landscape. The forest plan does not compel any Agency action or guarantee specific outcomes. It does not prioritize projects or activities. Priorities or the focus of forest management fit within the framework set forth in the forest plan, but evolve and are reassessed continually by forest leadership, in collaboration with the public. Within the constraints of this forest plan, management adapts to better achieve the vision the forest plan lays out. Decision making is informed by feedback from monitoring that actively tests assumptions, tracks relevant conditions over time, and measures management effectiveness.

The 1976 National Forest Management Act (NFMA) directs that forest plans be revised on a 10- to 15-year cycle. Thirty years have passed since the Regional Forester approved the original Carson forest plan in September 1986. In that time, the forest plan was amended 16 times. Scientific information, circumstances, agency and public understanding, as well as economic, social, and ecological conditions, have changed or evolved over the past 30 years and, as a result, management emphasis has shifted from outputs to outcomes. Forest plans are one of three levels of planning and decision-making that guide how NFS lands are managed.

The first and broadest level of planning occurs at the national level through the United States Department of Agriculture Forest Service Strategic Plan, a 5-year plan that allows public transparency of the agencies goals, objectives, and accomplishments. The second level of planning occurs at the level of National Forest System administrative units through forest plans. The third level of planning includes development of on-the-ground projects and activities, which are designed to achieve the desired conditions and objectives of the forest plan. Projects and activities must be consistent with the forest plan.

A forest plan guides and constrains Forest Service personnel, not the public. Any constraint on the public needs to be imposed by law, regulation, or through the issuance of an order by the Responsible Official under 36 CFR part 261, Subpart B. In addition to forest plans, management of NFS lands is also guided and constrained by laws, regulations, policies, practices, and procedures that are in the Forest Service Directive System. These are generally not repeated in forest plans. This forest plan is the result of a revision process conducted in accordance with the 2012 Land and Resource Management Planning Rule (36 CFR 219) and its 2015 planning directives (FSH 1909.12).

The best available scientific information (BASI) has been used to inform the planning process. The planning record documents how BASI was determined to be accurate, reliable, and relevant to issues being considered. The BASI includes relevant ecological, social, and economic scientific information. Use of BASI was documented for the assessment, the plan decision, and the monitoring program. The 2012 Planning Rule does not require that planning develop additional scientific information, but that planning should be based on scientific information that is already available. New studies or the development of new information is not required for planning unless required by other laws or regulation. In the context of the BASI, “available” means that the information currently exists in a form useful for the planning process, without further data collection, modification, or validation. Analysis or interpretation of the BASI may be needed to place it in the appropriate context for planning.

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design components historical content left out, lack of expansion of historic use; grazing logging, fuel wood, herds, access , remained undefined,
Lack of education of traditional use of general public - no oral history, dependencies on land , constituents cannot survive without historical industries, economic industries, " they have denied our history since 1905- design based around dependency of land to sustain those, if those sections are not defined, does not delineate, underscore lack of language of commitment to people, historic needs

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 7:53:57 AM

concerning because they are using as a tool of this plan-outcomes have to include social and economic impacts to the area

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 7:58:49 AM

best available scientific information that needs to come from an accredited university, peer-reviewed, land grant college university rangelands, Range Improvement Taskforce, NMSU, RITF REPORT 83 COMP STUDY

Development of this revised plan was an iterative process utilizing best available scientific information, regional guidance, internal feedback, and collaboration with a wide variety of government agencies, federally recognized tribes, non-governmental organizations, and publics.

Adaptive Planning and Monitoring

Forest planning is a continuous process that includes: (1) assessment; (2) plan development, amendment, and revision; and (3) monitoring. The intent of this forest planning framework is to create an integrated approach to the management of resources and uses, incorporate the landscape-scale context for management, allow the Forest Service to adapt to changing conditions, and improve management based on monitoring and new information.

An adaptive forest plan recognizes that there is always uncertainty about the future of natural systems and the timing and type of disturbances. Social conditions and human values regarding the management of national forests are also likely to change. Given that the setting for forest plan implementation will be changing over time, the forest plan incorporates an effective monitoring program that is capable of detecting change, with an adaptive flexibility to respond to those detected changes. The forest plan monitoring program recognizes key management questions and identifies measurable indicators that can inform the questions. When conditions change beyond what was anticipated in the forest plan, a responsive process using narrow amendments can be used to adjust plans between revisions.

The planning framework creates a structure within which land managers and partners work together to understand what is happening on the land. It is intended to establish a flexible forest plan that allows the forest to adapt management to changing conditions and improve management based on new information and monitoring.

The forest plan monitoring phase comes after the forest plan has been revised. The monitoring phase includes:

a. Designing management activities proposed to implement the plan in a way that will yield specific information and support learning.

b. Analyzing monitoring results using scientific methods that reduce uncertainty and improve understanding of system behavior. Well-designed monitoring programs and management activities contribute to better scientific analysis of these results. Monitoring and analysis also evaluate progress to achieving desired conditions and objectives of the plan and the assumptions used in developing the plan.

c. Learning from the results of the analysis and share how the results either confirm or modify the existing assumptions or provide feedback on management effectiveness. Learning is proactively shared with land managers and the public.

d. Adapting planning and management activities based on learning from the results of the analysis. This adaptation takes the form of modifying assumptions, models, data, and understanding of the system. This knowledge is then used to inform the planning process that leads to adjustment of plans and projects.

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Northern NM Stockman's association, was not inclusive, NM cattle association

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 7:59:43 AM

monitoring program that is capable of detecting change-established unachievable standards for cattle grazing; need to be peer reviewed by land-grant colleges

Forest Plan Components

The forest plan must include plan components. Plan components (plan decisions) guide future project and activity decision-making and include: desired conditions, objectives, standards, guidelines, suitability of lands, sustain historic uses, and goals. Plan components should (1) provide a strategic and practical framework for managing the Carson NF; (2) should be applicable to the resources and issues of the forest; and (3) should reflect the forest's distinctive roles and contributions. As a whole, the set of plan components must provide for social, economic, and ecological sustainability and multiple uses. Plan components were developed collaboratively with input from a variety of external and internal stakeholders, with broad interdisciplinary representation. Plan components do not need to reiterate existing law, regulation, or policy. An interdisciplinary team refined the final form and organization of the forest plan to be as understandable, useable, and integrated.

The Planning Rule (36 CFR 219 2012) sets out substantive requirements for plan components in four sections: 219.8 (Sustainability); 219.9 (Diversity of Plant and Animal Communities); 219.10 (Multiple Use); and 219.11 (Timber Requirements Based on the NFMA). While the Rule sets out these requirements in separate sections, the forest plan is not organized with a similar structure. The five plan components are described as:

Desired Conditions describe the aspirational vision for the Carson NF. They are the ecological, cultural, and socioeconomic aspirations toward that management of the land and resources of the plan area is directed. They are not commitments or final decisions approving specific projects or activities; rather, they guide the development of projects and activities. Projects are designed to maintain or move toward desired conditions and to be consistent with the plan over the long term. The desired conditions in this forest plan have been written to contain enough specificity so that progress toward their achievement may be determined. In some cases, desired conditions may only be achievable over hundreds of years.

Objectives describe how the Carson NF intends to move toward the desired conditions. Objectives are concise projections of measurable, time specific, and fiscally achievable intended outcomes. Objectives have been established for the work considered most important to address the needs for change and achieve desired conditions. They also provide metrics for evaluating accomplishments.

Standards are technical design constraints that must be followed when an action is being taken to make progress toward desired conditions. Standards differ from guidelines in that standards do not allow for any deviation without a plan amendment.

Guidelines are required technical design criteria or constraints on project and activity decision making that help make progress toward desired conditions. A guideline allows for departure from its terms, so long as the intent of the guideline is met. Deviation from a guideline must be specified in the decision document with the supporting rationale. When deviation from a guideline does not meet the original intent, a plan amendment is required.

Suitability of lands helps determine if future projects and activities are consistent with desired conditions based on the inherent capability of the land to support a particular use. Specific NFS lands within the plan area are identified as suitable for various activities, while others are identified as not suitable. The suitability of lands need not be identified for every use or activity.

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(language added by Sanchez)

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:13:41 AM
collaboration does accurately represent are void of historical industries practices and uses of the forest service

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 9:35:31 AM
219.8 does not identify or define how they plan to sustain livestock program

Number: 4 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 9:56:20 AM
social and economic aspirations are not well defined, desired conditions do not speak to program sustainability, speak to culture land social needs, NEPA, Federal And Management Policy Act “site laws” Desired conditions-this needs to be assessed and proven utilizing land grant universities

Number: 5 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:14:56 AM
"desired conditions" subjective to USFS

Number: 6 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:15:12 AM
who defines these metrics?

Number: 7 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:15:23 AM
Who sets these standards?

Number: 8 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 10:02:18 AM
what are the benefits and needs for that given land?

Suitability identifications may be made after consideration of historic uses and of issues that have arisen during the planning process. The plan must identify those NFS lands that are not suitable for timber production.

Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad, general terms, but do not include completion dates like an objective. Plans are not required to include goals, and none have been created here.

Forest Plan Coding

The forest plan displays plan components in text boxes to distinguish them from other sections of the plan. The forest plan also uses a unique coding system to reference plan components more easily and where the plan components apply using the following pattern: AA-BBB-CCC-DD. The series of letters before the first dash references either Forest-wide (FW) or a spatial area (e.g., DA for Designated Area or MA for Management Area) plan components. The second series of letters reference resource area (e.g., VEG for All Vegetation or WFP for Wildlife, Fish, and Plants). The third and fourth series of letters reference land of specific character (e.g., ALP for the Alpine and Tundra vegetation type or RMZ for Riparian Management Zones) found within the resource. Land-specific character plan components must also integrate plan components from the resource (second series of numbers). For example, Alpine and Tundra includes all plan components found within that vegetation community, plus all the plan components with All Vegetation resource. The fifth series of letters references the type of plan components (e.g., DC for Desired Conditions),[1] Forest Planing codes for historic uses.

So the unique coding for forest-wide (FW) Air Resources (AIR) Desired Conditions (DC) is AIR-FW-DC.

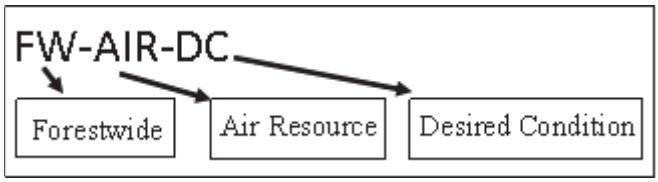

Figure 1. Example of forest plan coding

Codes for forest-wide (FW) Watershed and Water Resource (WSW); Riparian Management Zones (RMZ) land-specific character; Streams (STM) land-specific character; Objective (O) is FW-WSW-RMZ-STM-O, followed by a specific number. It is important to remember that land-specific character, such as Streams, is nested under both the resource, as well as possibly another land-specific character. So for Streams land-specific character, additional plan components can be found within Riparian Management Zones and Watershed and Water, according to the code.

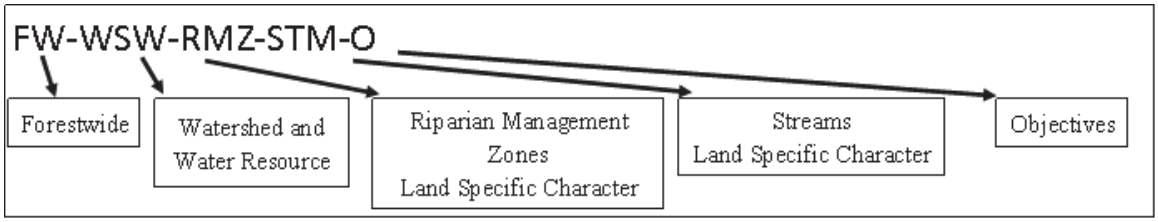

Figure 2. Example of nested forest plan coding

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language added by Sanchez

Finally, codes for the Management Area (MA) Jicarilla Natural Gas Management Area (JICMA) Guidelines (G), begins with MA-JICMA-G, followed by specific number associated with the guideline.

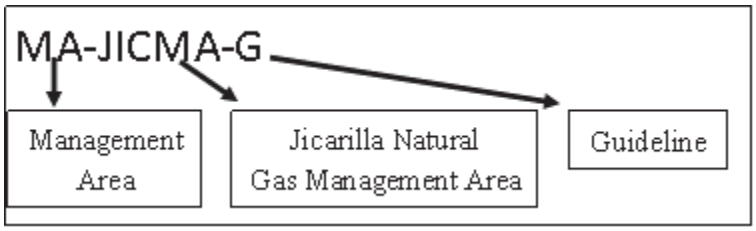

Figure 3. Example of forest plan (management area) coding

Any substantive changes to plan components require a plan amendment, with appropriate analysis as required under the National Environmental Policy Act (NEPA). Administrative changes can be used to make changes such as updates to data and maps, management approaches, and relevant background information; to fix typographical errors; or to update other required content of a plan (content that are not plan components). The public will be notified of all administrative changes to the forest plan.

Plan Coding Acronyms

AIR	Air Resources
ALP	Alpine and Tundra
ASP	Aspen
BOT	Botanical Areas
BP	Bristlecone Pine
CAM	Caves and Abandoned Mines
CDNST	Continental Divide National Scenic Trail
CR	Cultural Resources
CRF	Cliffs and Rocky Features
DA	Designated Areas
DC	Desired Condition
DEVRES	Developed Winter and Summer Resorts
EWSR	Eligible Wild and Scenic Rivers
FAC	Facilities Infrastructure
FFP	Forestry and Forest Products
FIRE	Wildland Fire Management
FRT	Federally Recognized Tribes
FSSR	Forest, Shrub, and Scrub Riparian
FW	Forest-wide
G	Guideline
GMMA	Grassland Maintenance Management Area
GRZ	Livestock Grazing

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once plan is adopted, makes it difficult for amendment

IRA	Inventoried Roadless Area
JICMA	Jicarilla Natural Gas Management Area
LAND	Lands
MA	Management Area
MCD	Mixed Conifer, with Frequent Fire
MCW	Mixed Conifer, with Aspen
MM	Mining and Minerals
MSG	Montane Subalpine Grassland
NIS	Nonnative Invasive Species
NSBW	National Scenic Byway
NTRL	National Scenic, Historic, and Recreational Trails
O	Objective
ONRW	Outstanding National Resource Waters
PART	Partnerships
PJO	Piñon-Juniper Woodland
PJS	Piñon-Juniper Sagebrush
PPF	Ponderosa Pine Forest
REC	Recreation
RHC	Rural Historic Communities
RMZ	Riparian Management Zones
RWMA	Recommended Wilderness Management Area
S	Standard
SAGE	Sagebrush
SAMA	San Antonio Management Area
SCEN	Scenery
SFF	Spruce-Fir Forest
SL	Soil Resources
SNS	Springs and Seeps
STM	Streams
SU	Special Uses
TFA	Transportation and Forest Access
VEG	Vegetation
VFSYU	Vallecitos Federal Sustained Yield Unit
VVMA	Valle Vidal Management Area
WB	Waterbodies
WFP	Wildlife, Fish, and Plants
WHT	Wild Horse Territories
WILD	Existing Wilderness

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WR	Wetland Riparian
WSW	Watersheds and Water
WSR	Existing Wild and Scenic Rivers
ZOO	Zoological Areas

Other Forest Plan Content

- Distinctive Roles and Contributions of the Carson National Forest – Chapter 1

  Describes the Carson National Forest's distinctive contributions to the local area, region, and nation, and the roles for which the forest is best suited, considering the Agency's mission and capabilities.

- Priority Watersheds – Chapter 2

  Priority watersheds have been identified using the Forest Service National Watershed Condition Framework (WCF) as areas where plan objectives for restoration focus on maintaining or improving watershed condition. These priorities may change over the life of the forest plan to concentrate restoration in other areas.

- Forest Plan Monitoring – Chapter 4

  Monitoring includes testing assumptions, tracking changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives.

- Proposed and Possible Actions – Chapter 5

  Possible actions are the types of projects that the forest may use in the next 3 to 5 years to move toward achieving desired conditions and objectives.

A forest plan may also include "optional content", such as background information, explanatory narrative, general management principles, potential management approaches[1], management challenges, performance history, performance risks, contextual information, or referenced material. Optional content is not labeled or worded in a way that suggests it is a plan component and does not imply or constitute a decision, but it may help clarify plan direction and how it may be applied.

A change to "other required plan content" or "optional content" does not require a plan amendment; instead such changes may be made using an administrative correction process.

[1] Management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed with management approaches, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

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Forest Plan Concepts

This plan relies on several basic concepts that are either foundational assumptions or frameworks that are used throughout to quantify or classify plan direction. Some of these concepts are not specifically referred to anywhere else in the plan, but they set the tone for the plan throughout and are therefore important to consider during implementation.

All lands is the concept that ecosystems transcend land ownership boundaries, thus, effective land and resource management requires cooperation and collaboration among the Forest Service, other land managing agencies, federally recognized tribes, and private landowners. This plan was developed using an approach that considers the greater landscape and the Carson NF's ecological, social, and economic role in that landscape.

At-risk species are federally recognized as endangered, threatened, proposed, and candidate species, or species of conservation concern (SCC). SCCs are species other than federally recognized threatened, endangered, proposed, or candidate species known to occur on the Carson NF and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long term on the forest. For SCC, habitat management and compatible multiple uses will be accomplished in a way that ensures species' persistence on the Carson NF, in accordance with the 2012 Planning Rule (36 CFR § 219.9(b)). 1 so at risk is the social and economic welfare of communities within the the CNF. For many at-risk species, essential ecological conditions can be provided through "coarse filter" plan components, such as desired conditions and standards and guidelines, for specific vegetation communities (e.g., ALP, MCD, PJO). These may be adequate to ensure persistence of at-risk species and maintain viable populations on the Carson NF. For other at-risk species, fine-filter plan components that are species-specific (timing restrictions, etc.) may be required to ensure persistence. In this forest plan, at-risk species associated with a vegetation community are listed after plan components, but are not in a text box, since their identification is not a forest plan decision, as are plan components. At-risk species can be changed based on new scientific information throughout the life of the forest plan, without an amendment (FSH 1909.12, 21.22b).

2 **imate change adaptation** is addressed throughout this plan, indirectly through desired conditions in the form of functional ecosystems and resilient landscapes, and directly through management approaches and the monitoring plan where appropriate. This plan is designed around strategies that are responsive to an uncertain and changing climate, 3 ust be vetted through sound science, in maintaining and restoring resilient native ecosystems; adaptive management; anticipating increased disturbance; 4 creasing water conservation and planning for reduced supply; and anticipating increased recreational use (increased number of summer visitors and extended summer season of use).

Ecosystem Services are those products and processes in functional ecosystems that people enjoy or from which they benefit. The description of each resource in the plan includes a discussion of the ecosystem services that it provides. Benefits that people obtain from ecosystems may be grouped into four broad categories:

1. **Supporting** ecosystem services are those that are necessary for the production of other ecosystem services, such as pollination, seed dispersal, soil formation, and nutrient cycling.
2. **Regulating** ecosystem services are the benefits people obtain from the regulation of ecosystem processes, such as long term storage of carbon; climate regulation; water

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Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 10:15:24 AM
must be vetted through sound science, land grant college

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:15:50 AM
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Number: 4 Author: Sanchez Ranches Subject: Highlight Date: 3/23/2019 8:25:21 PM
increasing water conservation

filtration, purification, and storage; soil stabilization; flood and drought control; and disease regulation.

3. **Provisioning** ecosystem services are the products people obtain from ecosystems, such as clean air and fresh water, energy, food, fuel, forage, wood products or fiber, and minerals.
4. **Cultural** ecosystem services are the nonmaterial benefits people obtain from ecosystems such as educational, aesthetic, spiritual, and cultural heritage values, recreational experiences, and tourism opportunities (36 CFR 219.19).

Fire regime is a classification of the role that fire plays in a landscape or vegetation community. The LANDFIRE project classifies fire regimes into five groups based on a combination of fire frequency and fire severity:[2]

Group	Frequency	Severity	Severity Description
I	0 – 35 years	Low /Mixed	Generally low-severity fires replacing less than 25% of the dominant overstory vegetation; can include mixed-severity fires that replace up to 75% of the overstory
II	0 – 35 years	Replacement	High-severity fires replacing greater than 75% of the dominant overstory vegetation
III	35 – 200 years	Mixed/Low	Generally mixed-severity; can also include low-severity fires
IV	35 – 200 years	Replacement	High-severity fires
V	200+ years	Replacement/ Any severity	Generally replacement-severity; can include any severity type in this frequency range

Integrated resource management is multiple use management that recognizes the interdependence of ecological resources and is based on the need for integrated consideration of ecological, social, and economic factors (36 CFR 219.19).

Integration recognizes and identifies key relationships between various plan resources and activities. Plan components are integrated to address a variety of ecological and human needs. For example, desired conditions for ponderosa pine incorporate habitat needs for a variety of species, as well as the scenic components that recreationist's desire. Interrelationships between parts of the plan are identified with crosswalks to show their systematic nature. In electronic versions of the plan, these crosswalks are hyperlinked (indicated by italicized text) to allow users to be easily redirected to the other relevant sections of the plan.

Ranges of desired conditions reflect either natural or desired variation in the composition and structure within a community or resource area. Desired conditions may or may not be the same as historic conditions and may have wide ranges of values due to spatial variability in soils,

[2] Table is based on FRCC Guidebook version 3.0, September 2010

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elevation, aspect, or social values. Where desired conditions specify a range of values, most acres would be managed towards the median of the range, but representation across the range is equally desired. The distribution of values within that range may vary depending on the resource. It may also be desirable to manage for desired conditions at the upper or lower end of a range in a particular area. For example, managing for lower vegetation density in the wildland-urban interface (WUI) to reduce fire behavior in proximity to private property and human occupancy. Higher densities may be desired in other areas to meet habitat requirements for specific species.

Resilience is the ability of an ecosystem and its component parts to absorb, or recover from the effects of disturbances through preservation, restoration, or improvement of its essential structures and functions and redundancy of ecological patterns across the landscape. (FSM 2020.5).

Sustainable Operations is the commitment by the Forest Service to use energy efficiently and reduce consumption of resources in daily operations. By doing work differently in six Footprint Focus Areas, the Carson NF is reducing its environmental impact.

1. Energy - Improve energy efficiency and reduce greenhouse gas emissions, through the reduction of energy. Shift toward renewable energy, such as solar power and biomass.
2. Water - Reduce water consumption in Forest Service buildings, grounds, and related facilities.
3. Green Purchasing - Increase the sustainability performance of purchased goods and services, and the performance of suppliers, contractors, and partners. Increase the number of Forest Service buildings that are Leadership in Energy and Environmental Design (LEED) certified.
4. Fleet and Transportation - Improve our transportation and travel practices, which in turn will reduce harmful emissions, increase operational and fuel efficiency, and reduce the use of non-renewable fuel.
5. Waste Prevention and Recycling - Minimize waste generation and reduce landfill use. Reduce, reuse and recycle materials.
6. Sustainability Leadership - Make strong efforts to meet or exceed the requirements of Executive Orders and policies related to sustainable operations. Leadership and management have a commitment to communicate the agency's vision for sustainable operations.

Sustainability is the ability of the Carson NF and its resources to meet the needs of the present generation without compromising the ability to meet the needs of future generations. Sustainability includes ecological, economic, and social capabilities. It requires the symbiotic interaction among ecological integrity, the ability of society to produce and consume or otherwise benefit from goods and services, and the ability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another in vibrant communities. (FSM 2020.5) 1ederal Laws and Treaties requireing Sustainability of Social and 2cono

Vegetation community is a definition of a group of sites that have similar plant species composition, successional patterns, and disturbance regimes, such that similar sites will respond in similar ways to disturbance, biological, and physical processes. In some areas there is a difference between the existing vegetation on a site and the vegetation community it belongs to,

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such as where historic grasslands are currently invaded by trees. The desired vegetation community, not the existing vegetation, determines which desired conditions apply. Most vegetation communities correspond to a mapped Ecological Response Unit (ERU), though it is appropriate to base management for a particular vegetation community on local conditions, including soils and other site-specific indicators.

Forest Plan Organization

Chapter 1. Introduction briefly describes the planning area and its context, and a summary of the assessment report.

Chapter 2. Forest-wide Plan Components includes forest-wide desired conditions, objectives, standards, and guidelines and is split into two sections: "Ecological Sustainability and Diversity" and "Social, Cultural, and Economic Sustainability and Multiple Use" (goods and services). Standards and guidelines are typically located in the relevant activity section of the plan, but when standards or guidelines pertain to multiple activities, they are located in the applicable resource section.

Chapter 3. Designated Areas and Management Areas contains the plan components applicable to specific areas that call for site-specific management. This chapter is divided into two sections: "Designated Areas" and "Management Areas" (MAs). Designated areas are mostly designated by statute, but some categories may be established administratively through the federal executive branch. Plan components for a designated area may differ from forest-wide guidance and must provide for appropriate management of the designated area, based on the applicable authorities and the specific purposes for which the area was designated or recommended for designation.

Management areas are used to describe how plan components apply to specific parcels of NFS land. A management area represents a management emphasis for an area or several similar areas on the landscape. Plan components for a management area may differ from forest-wide guidance by:

1. Constraining an activity where forest-wide direction does not;
2. Constraining an activity to a greater degree than forest-wide direction; or
3. Providing for an exception to forest-wide direction, when forest-wide direction is in conflict with the management emphasis of the management area. For example, a forest-wide desired condition in Spruce-Fir Forest (SFF) describes openings to be maintained by natural processes, while a desired condition for the Developed Winter and Summer Resort Management Area (DEVRES) describes resort activities playing a dominant role in maintaining man-made grassy openings intermixed with forested areas.

Forest-wide plan components are applied, unless there is management direction for a designated area or management area.

Chapter 4. Forest Plan Monitoring Program outlines the monitoring and evaluation of plan implementation is used to determine progress toward achieving desired conditions and objectives, and how well management requirements, such as standards and guidelines, are being applied. The monitoring strategy provides a framework for subsequent monitoring and evaluation designed to inform adaptive management.

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citizens and county of Rio Arriba- request social and economic impact study

Chapter 5. Proposed and Possible Actions contains a list of possible actions and potential management approaches. Possible actions are the types of projects that the forest may use in the next 3 to 5 years to move toward achieving desired conditions and objectives. They represent examples of actions that would likely be consistent with plan components, but they do not commit the Agency to perform or permit any particular action.

Consistency of Projects with the Forest Plan

All projects and activities authorized by the Forest Service must be consistent with the forest plan (16 USC 1604(i) and 36 CFR 219.15(b-c)). If a proposed project or activity is not consistent with a plan component, the Responsible Official has the following options (subject to valid existing rights):

- Modify the proposed project or activity to make it consistent with the applicable plan components;
- Reject the proposal or terminate the project or activity;
- Amend the plan so that the project or activity will be consistent with the plan as amended; or
- Amend the plan contemporaneously with the approval of the project or activity so that the project or activity will be consistent with the plan as amended. This amendment may be limited to apply only to the project or activity. (36 CFR 219.15(c))

The following criteria should be used in determining if a project or activity is consistent with the forest plan (36 CFR 219.15(d)):

1. **Desired conditions, objectives, and goals.** A project is consistent with plan desired conditions, objectives, or goals when it:
    e. Maintains or makes progress toward attaining one or more plan desired conditions, objectives, or goals applicable to the project;
    f. Has no effect or only a negligible adverse effect on the maintenance or attainment of applicable desired conditions or objectives, or goals;
    g. Does not foreclose the opportunity to maintain or achieve any of the applicable desired conditions, objectives, or goals over the long term, even if the project (or an activity authorized by the project) would have an adverse short-term effect on one or more desired conditions, objectives, or goals; or
    h. Maintains or makes progress toward attaining one or more of the plan's desired conditions, objectives, or goals, even if the project or activity would have an adverse but negligible effect on other desired conditions, objectives, or goals.

The project decision document should include an explicit finding that the project is consistent with the plan's desired conditions, objectives, and goals, and briefly explain the basis for that finding. In providing this brief explanation, the project decision document does not need to explicitly address every desired condition, objective, and goal set forth in the plan. Rather, a general explanation is all that is needed, so long as the consistency finding is made based on a consideration of one of the four factors noted above.

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When a categorical exclusion from NEPA documentation applies and there is no project decision document, the finding and explanation should be in the project record.

2. **Standards.** A project or activity is consistent with a standard if the project or activity is designed in exact accord with the standard.

The project documentation should confirm that the project or activity is designed in exact accord with all applicable plan standards.[3] The Responsible Official can make a single finding of consistency with all applicable standards, rather than there needing to be individual findings.

3. **Guidelines.** A project or activity must be consistent with all guidelines applicable to the type of project or activity and its location in the plan area. A project or activity can be consistent with a guideline in either of two ways:

   a. The project or activity is designed exactly in accord with the guideline, or

   b. A project or activity design varies from the exact words of the guideline but is as effective in meeting the purpose of the guideline to contribute to the maintenance or attainment of relevant desired conditions and objectives.

The project documentation should briefly explain how the project is consistent with the applicable plan guidelines. When the project is designed in exact accord with all applicable guidelines, the project documentation should simply confirm that fact in a single finding of consistency with all applicable guidelines. When the project varies from the exact guidance of one or more applicable guidelines, the project documentation should explain how the project design is as effective in meeting the purpose of the guideline(s) as the exact guidance in the guideline(s).

4. **Suitability.** A project with the purpose of timber production may only occur in an area identified as suitable for timber production (16 U.S.C. 1604(k)), [1]r areas to protect health of the Forest. Except for projects with a purpose of timber production, a project or activity can be consistent with plan suitability determinations in either of two ways:

   a. The project or activity is a use for which the area is specifically identified in the plan as suitable, or

   b. The Project or activity is not a use for which the area is specifically identified in the plan as suitable, but is not a use precluded by a "not suitable" determination.

The project documentation should confirm that the project or activity conforms with items 1 or 2 above.

Plans may have other content, such as, background, collaboration strategies, context, existing conditions, glossary, introduction, monitoring questions, other referenced information or guidance, performance history, performance measures, performance risks, program emphasis, program guidance, program priorities, possible actions, roles and contributions, management

[3] For timber projects there should positive findings for meeting the timber standards and guidelines because the planning rule requires plans to have direction to meet those NFMA requirements. There must be specific findings that the project meets the requirements. So, if there is clearcutting, there must be an explanation why in this situation, clearcutting is the optimum method to use. Also, while the NEPA analysis describes the effects to soils, watershed etc. there must be a finding that these resources will not be "irreversibly damaged."

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challenges, or strategies, but such other content are not matters to which project consistency is required.

Forest Plan Implementation

Project-level planning is the mechanism for plan implementation. Project planning translates the desired conditions and objectives in the plan into proposals that identify specific actions, design features, and project-level monitoring. Projects address site-specific needs developed locally with input from experts and stakeholders and consideration of the most current and relevant information. Project decisions are made following public involvement and analysis. Important considerations in project development include consistency with the plan, consistency with higher-level direction, project potential effects on moving toward desired conditions at multiple scales, and feedback from project- and plan-level monitoring regarding the effectiveness of management strategies.

Forest projects and activities are to be consistent with the direction in this plan as well as from current law, regulation, and policy. This plan does not reiterate higher-level direction; instead, it includes a partial list of applicable laws, regulations, executive orders, and policy for reference in Appendix B.

In order to ensure a project is consistent with the plan, its design and implementation should consider its setting, any Designated or Management Areas it overlaps, and plan guidance related to any resources or conditions that may be present in the area (e.g., cultural resources, nonnative species, geologic formations, wildlife, etc.). Additionally, they should consider any potential conflicts with other authorized projects and activities. Project design should be consistent with forest-wide plan direction except where superseded by Designated or Management Area direction, which takes precedence.

Plan- and project-level monitoring and evaluation are the tools for gathering information on progress toward desired conditions, the effectiveness of plan implementation, and the appropriateness of plan direction. This information is subsequently used to determine management needs and adjust management strategies, which, in part, determine the form of future projects and activities. As such, monitoring and evaluation are key elements of plan implementation, as they guide future management occurring under the plan. The monitoring plan contained in Chapter 4 of this document, in conjunction with project-level monitoring, will provide the framework to support adaptive management on the Carson NF.

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Chapter 1. Introduction

Plan Area

The Carson National Forest (NF) is one of five national forests in New Mexico. It covers 1,486,372 acres, and is located in Rio Arriba, Taos, Mora, and Colfax counties. The forest is divided into six ranger districts (RD) - Camino Real, Canjilon, El Rito, Jicarilla, Tres Piedras, and Questa. East of the Rio Grande Gorge, the Questa and Camino Real ranger districts span the Sangre de Cristo Mountains (referred to as the "east side"). West of the Rio Grande, the Tres Piedras, El Rito, and Canjilon ranger districts cover the slopes of the San Juan Mountains (referred to as the "west side"). To the far west, Jicarilla RD sits on the eastern edge of the San Juan Basin, with rugged buttes, steep canyons, and prominent mesas. The Carson NF shares boundaries with the Rio Grande NF in Colorado, the Santa Fe NF, the Taos Pueblo, the Jicarilla Apache Nation, the Southern Ute Tribe, the Picuris Pueblo, US Department of Interior (USDI) Bureau of Land Management (BLM), the towns of Red River, Questa, Taos, Taos Ski Valley, Peñasco, Tres Piedras, El Rito, Canjilon, and private lands. This land and resource management plan ("forest plan") covers all the National Forest System (NFS) lands within the Carson NF boundary.

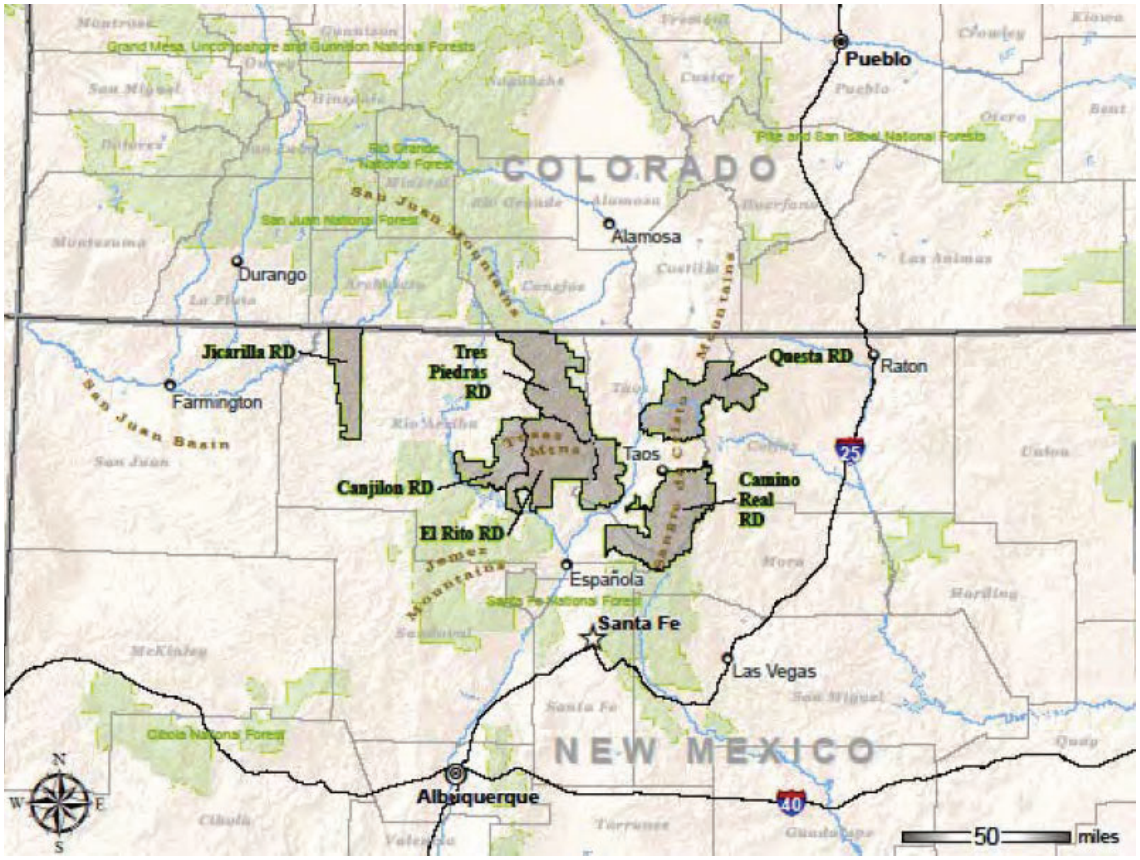

Figure 4. Vicinity map of the Carson National Forest

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Geographic Context

The Carson NF lies across the Sangre de Cristo (east side) and Tusas mountains (west side), which extend north into Colorado and south onto the Santa Fe NF. Their high elevations fill two major rivers, the Rio Grande and Rio Chama, and are vital water sources to both small local communities and larger urban areas downstream. The Carson NF manages resources that are important regionally and nationally, from the rare high alpine environments around the highest peak in New Mexico, to the broad meadows and bristlecone pine forests of Valle Vidal, to the natural gas producing woodlands of the San Juan Basin, to fuelwood, timber, and other forest products that local communities rely on.

The NFS lands make up 36.6 and 23.4% of Taos and Rio Arriba counties, respectively, and the majority of these two counties are under management of federal agencies or federally recognized tribes. Taos, Rio Arriba, Mora, and Colfax counties benefit from having the NFS lands close by for activities such as recreation, wood product harvesting, oil and gas production, and livestock grazing. Forest Service management supports the continued relationship between the Carson NF and the communities in these counties, while its economic influence reaches beyond those nearby communities and into San Juan County in New Mexico and Conejos and Costilla counties in Colorado.

Historical Context

For much of the span of human history, American Indians were the only people to occupy and use the lands that encompass the Carson NF. Their utilization of the forest and the surrounding area began with the earliest human occupation of the Western Hemisphere and persists to the present day. The land-based cultures that exist today in Northern New Mexico have relied on the forests, valleys, and water of these public lands spanning many generations. The earliest inhabitants were small bands of nomadic hunters and gatherers that roamed the Southwest beginning approximately 13,000 years ago. This hunting and gathering lifeway was the sole human socioeconomic model until approximately 2,000 years ago when a sedentary agricultural based socioeconomic model began to supplement, and in some cases, supplant the hunter-gatherer cultures in the area. The contemporary Pueblo people in Northern New Mexico developed their modern ethnic identities and relationship to the land during the past 2,000 years. Taos Pueblo is considered to be one of the oldest continuously inhabited communities in the United States, dating back almost 1,000 years.

The first Spanish visitors came to the Taos area as early as 1540 and settled along the Rio Grande and its tributaries, 1troduction on livestock 1597. In 1598 missionaries at Taos and Picuris Pueblos established the fir permanent Spanish presence in the valleys, and by the early 1600s, a few Spanish speaking pobladores (settlers) were living in fortified ranches or settlements of one or more households along streams and rivers. The communities constructed the first acequias (irrigation ditches) to transport water from rivers and streams to irrigate fields. The expansion of Spanish settlements was nurtured by water management, and water resources remain fundamental to the human and social fabric in Northern New Mexico. Many Spanish era acequias are still in use and water rights are held tightly and highly valued, socially if not monetarily. “AGUA ES VIDA” or “Water Is Life” is a common phrase in Northern New Mexico.

The increased cold, periodic droughts, and subsequent diminished food supply, combined with the catastrophic impact of European epidemic diseases, culminated in 1680 with the violent

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contributions were made by the Spanish; failed to give oral history leave out key comments

expulsion of the Spanish from New Mexico. The Pueblo Revolt was a province-wide rebellion organized and initiated by an Ohkay Owingeh (San Juan Pueblo) religious leader named Popé who had been in hiding from the Spanish at Taos Pueblo. For over twelve years, the Spanish were kept out of the northern Rio Grande Valley, but by 1693, Governor Diego de Vargas had reoccupied the capitol at Santa Fe.

Following the reconquest, Hispanic families began to reenter northern New Mexico and develop new homes and ranches. From the late-1600s to mid-1800s, Spain and later Mexico made land grants or mercedes to individuals, groups, and towns to promote development in the frontier lands that today constitute the American Southwest. In New Mexico, land grants-mercedes were issued to encourage settlement, reward patrons of the Spanish government, and create a buffer zone between federally recognized tribes and pueblos and the more populated regions of its northern frontier. In the 1800s, Spanish communities, including land grants-mercedes, began to prosper, and the population increased. As farmers and sheepherders moved into these areas, many churches and small villages were created. Mexico gained its independence from Spain in 1821 and New Mexico became a part of the Mexican Republic. Soon after, Mexico sanctioned a trade route (Santa Fe Trail) with the also recently independent United States. For the first time, the area started to move away from a strictly barter economy, as many residents became active and successful in the burgeoning international trade. The Santa Fe Trail also encouraged a large influx of American, Canadian, and other non-Hispanic traders and trappers enticed by the growing fur trade. Fur trapping protected valuable and limited domesticated livestock in New Mexico by removing predators including Mexican wolves, Mexican grizzly bears, and mainland grizzly bears to the point of extinction.

Sporadic prospecting in the Sangre de Cristo Mountains occurred during the 1850s, but following the Civil War prospectors flooded the area. The desire to develop gold interests in the Moreno Valley and inner mountains led to the removal of the Jicarilla Apache and Mouache Ute to the Cimarron Indian Agency in the 1860s, and to reservations by 1890. There are scattered patented mining claim inholdings of private land across the Questa, Camino Real, and Tres Piedras ranger districts that have been worked periodically since the late 1800s.

Large commercial sheep ranching took advantage of the expanded American market and growing demand for meat from miners across the Southwest, straining what the land could support in an attempt to maximize economic gain. In 1856, 200,000 head were driven to California. Breeding with American wool-producing varieties made New Mexican sheep profitable for wool as well as mutton, and sheep numbers in New Mexico rose from 1.6 million in 1870 to 5.2 million by 1883.

Railroads began to push into what is now the Carson NF by 1880, and train logging became a powerful economic driver in Northern New Mexico for the next 40 years. Timber harvested from the Carson NF was utilized throughout the American West to support rapidly expanding railroads, as well as mining operations. Extensive logging cleared all of the largest pine, fir, and spruce trees from many areas. This period also marked the beginning of a shift from sheep to more profitable cattle, which reached peak numbers in the early 1890s. By 1900 there were 3.5 million sheep valued at $7.6 million, and only 843,000 cattle but with a value topping $16 million. The cattle and sheep boom and the environmental damage they caused led Congress to establish and regulate federal reserves across the American West.

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limited domesticated livestock in New Mexico

Synchronous with the arrival of the railroads, a new economic enterprise – tourism – arose throughout New Mexico, with remarkable infrastructure that provided lodging, dining, and tours to the rapidly expanding middle class. The American Southwest became the readily accessible new "exotic", with its stunning landscapes and terrains, breathtaking vistas, remarkable American Indian and Hispanic cultures and a truly original American Art.

Since the early 1900s, oil and gas exploration and development has been an integral part of the local economy and livelihood of residents in the San Juan Basin. Natural gas development began on the Jicarilla RD, located on the eastern edge of the San Juan Basin, in the mid-1900s. After World War II, increasing national affluence, mobility, and leisure time fueled a growing demand for outdoor recreation. The first ski area on the Carson NF was the Agua Piedra Ski Club, which ran a rope tow between 1940 and 1952. Sipapu Ski Area installed the first lift just down Rio Pueblo Canyon in 1952, Taos Ski Valley opened in 1955, and Red River Ski Area in 1959. The growth of year-round outdoor recreation of multiple types has continued, with most visitation on the Carson NF now being for purpose of some form of recreation. There is growing demand for mountain biking, motorized recreation, and hunting, [1]vestock grazing [2]nd all traditional uses. Today, by far the Car local economic impact is through recreational tourism.

Distinctive Roles and Contributions of the Carson National Forest

Every forest in the National Forest System provides a distinctive role and contribution to the surrounding local area and larger region. The rich history and cultural uniqueness of Northern New Mexico help frame the roles and contributions the Carson NF provides to the local area and region. The Carson NF is predominately a community forest. There are 54 small unincorporated communities within the forest boundaries, as well as several adjacent small incorporated towns and villages. Historically, the communities around the forest have relied upon the many resources and uses the forest provides for food, shelter, and economic support for their families. Most of these traditional communities and families continue to look to the forest for economic opportunity and vitality. During the development of this forest plan, a forest user described the importance of the Carson NF by stating, "The forest is what makes the community a community." It is this attachment to the landscape and cultural uniqueness of those who settled in the area that provide the background for the roles and contributions of the Carson NF.

The natural resources found on the Carson NF have provided for families and communities in Northern New Mexico for centuries. The forest contributes resources and uses that are important to federally recognized tribes and pueblos, land grant communities, acequias, traditional Hispanic communities, and many contemporary residents all with historic, cultural, and social connections to the forest. As people move to the area they settle along the flanks of the mountains, in the valleys, in proximity to travel routes, and near its rivers and streams; but, it is the mountains, with their majestic beauty and dominance over the landscape, their trees for timber and fuelwood, water for irrigating agricultural lands via acequias, watering livestock and domestic drinking water, and wildlife and plants for food that have drawn individuals and families to settle the land and establish communities. The mountains and their natural assets provide the basis for the traditional customs and practices that contribute to cultural life and to social institutions important to the people who live here. These include fuelwood for heating and cooking, latillas and vigas, opportunity for hunting and fishing, forage for livestock grazing, medicinal plants and herbs, pinon nuts, family recreation opportunities, and water for acequias. There are also important sacred sites to federally recognized tribes and pueblos located on the forest.

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historical uses, losing 6000 acres a day nationally, agriculture footprint diminishing

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The Carson NF comprises some of the most productive and important watersheds and provides an important component for biological diversity in the landscape of the southwestern United States. Over 1,000 species of plants and animals occur on the Carson NF. The forest's high plateaus and rugged mountains are major sources of snowpack and stream runoff, contributing to over 40% of the waters that flow into the Rio Grande from northern New Mexico and southern Colorado. The Carson NF manages varied landscapes, vegetation, and wildlife that provide unique combinations of resources and recreation opportunities that attract a wide spectrum of forest users. The State of New Mexico has designated many streams and lakes in the Carson NF's wilderness areas and Valle Vidal as Outstanding National Resource Waters (ONRWs) 1nd water rights 2djudicated through beneficial use.
The high elevations on the Carson NF support environments that are rare in the state and in the region. Alpine and tundra, bristlecone pine, montane and subalpine grasslands, and the piñon-juniper-sage mix are all uncommon in the surrounding landscape. High alpine on the forest is particularly unique and though it is well protected it is also vulnerable. Riparian corridors and aspen groves are also limited in extent, but they attract visitors and provide disproportionately important habitat.

The Carson NF is home to large mammals, such as mule deer, elk, bighorn sheep, pronghorn, mountain lion, and black bear, as well as many other species. Diverse wildlife provides enjoyment and aesthetic value for photographers, bird watchers, nature lovers, hikers, campers, and hunters. Game species support traditional ways of life and employment for outfitters and guides, 3ildlife numbers need to be managed to protect the resource. The Carson NF manages critical habitat for the Mexican spotted owl, as well as two active wild horse territories.

In the winter, the plateaus and mountains of the Carson NF provide skiing, snowboarding, snowmobiling, and snowshoeing opportunities in developed and undeveloped settings. The rest of the year, they attract hikers, mountain bikers, campers, and other recreationists from other parts of New Mexico and other states. The Carson NF manages over 110,000 acres of designated wilderness, three National Recreation Trails, two National Historic Trails, and a portion of the Continental Divide National Scenic Trail. Most visitors to the Carson NF come for some form of recreation, making tourism the single largest contributor to the local economy for surrounding communities. Local residents and tourists also visit for relaxation, spiritual ceremony, rejuvenation, and to gather resources. Many area residents have jobs or businesses that are directly or indirectly dependent on tourism. Natural gas production on the Jicarilla RD also provides many employment opportunities, as well as significant revenue to the State of New Mexico and the federal government in the form of royalties.

Summary of the Assessment

4he conditions, trends, and sustainability of ecological, social, and economic resources on the Carson NF were assessed in 2015. The assessment helped identify existing management direction outlined in the previous 1986 forest plan that needs to change in order to create sustainable resources, goods, and services. It integrated key findings of risk from ecological, social, and economic perspectives to determine where conditions and trends indicated a need to change the plan. The Assessment Report of Ecological, Social, and Economic Conditions, Trends, and Sustainability resulted in 14 key findings of risk:

1. Forested frequent-fire dependent ecosystems (e.g., Mixed Conifer with Frequent Fire and Ponderosa Pine Forest) are departed and prone to uncharacteristic, stand replacing fire.

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no language provided social and economic impacts are, availability of resources, protecting the historical use

Management needs to restore multi-aged, open stands that burn frequently, with low severity surface fire.

2. Lower elevation, non-forested vegetation communities are at risk from woody species (e.g., sagebrush, piñon pine, juniper, chamisa) encroachment and infill, which reduce herbaceous cover and nutrient cycling. Substantially more mechanical and prescribed fire treatments are needed to remove trees and shrubs and restore historic conditions.
3. Grassland communities and herbaceous understories are less productive than they were historically. Management needs to increase available grass cover for forage and soil protection through mechanical, chemical, and prescribed fire treatments, adaptive range management that responds to ecosystem based conditions, and management of invasive species.
4. Aspen regeneration is limited due to insect induced mortality and reduced fire frequency. Management needs to treat spruce fir and wet mixed conifer forests to stimulate aspen regeneration and mimic historic patch size. Aspen on the Carson NF has been less affected by mortality seen in other parts of the western United States, suggesting it could play an important role in maintaining functional aspen components on the broader landscape.
5. Surface water is at risk across much of the forest, due to temperature, turbidity, and development over 90% of springs. While some influences on water quantity and quality are outside the Carson NF's ability to manage, it does have control over road density, road condition, livestock grazing, waterbody construction and alteration, and overall watershed conditions on the forest.
6. Aquatic biota and riparian systems are able to maintain some of their function, though both are generally impaired in places on the Carson NF. Management needs to establish riparian management zones that will protect, restore, and maintain riparian and aquatic condition and function.
7. Soils, particularly those at lower elevations on the forest, have substantially reduced soil function. There is a need to manage for effective groundcover, while maintaining site appropriate species composition.
8. Climate change intensifies the risk to ecosystem integrity in all systems. There is a need to implement adaptive management strategies; anticipate increased disturbance; maintain and restore resilient native ecosystems; increase water conservation and plan for reduced supply; and anticipate increased recreational use.
9. All the above threats to ecosystems also threaten species associated with these ecosystems, due to alteration of habitat features. Management needs to protect important habitat features and maintain habitat by protecting, restoring, and maintaining ecosystem condition, function, and connectivity.
10. The ability of the Carson NF to provide adequate forage to contribute to opportunities for livestock grazing in Northern New Mexico is at risk of being unsustainable. Management needs to focus on the restoration and maintenance of ecological integrity and work with permitees to adapt to drought, in order to maintain and protect forage, NF management has a legal responsibili to sustain the Livestock Grazing Program.
11. The ability of the Carson NF to supply sufficient quality and quantity of surface and ground water to meet the water needs of local communities is at risk of being unsustainable. The forest cannot control surface or groundwater withdrawals once the water leaves the forest;

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historic carrying capacity- legal responsibility to sustain livestock gracing program- NEPA

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however, the forest can improve watershed health and function, and restore and maintain ecological integrity of vegetation communities, to reduce the risk to water availability and quality.

12. The ability of the Carson NF to remain relevant and responsive to changing recreation user demands is at risk of being unsustainable. Management needs to develop a sustainable recreation strategy that may include closing or decommissioning underutilized sites and infrastructure; develop new sites or trails; and upgrade existing infrastructure to meet user needs and desires, while also being economically feasible and adaptable.
13. The ability of the Carson NF to maintain its existing infrastructure is at risk of being unsustainable. There is a need for management to prioritize maintenance opportunities, utilize alternative funding sources, and seek alternative methods and opportunities for repair and maintenance.
14. The ability of the Carson NF to continue contributing the social and economic benefits desired by local communities, families, and the visiting public is at risk of being unsustainable. Relationships with local communities and groups are vital to forest management and allow the forest to provide the services and products that local and visiting forest users want and need. The Carson NF will need to creatively engage public, local communities, and private entities to effectively manage the forest's resources. The new forest plan will be successful, if the public and the Forest Service share in its ownership and implementation.

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Chapter 2. Forest-wide Plan Components

Throughout this chapter, plan components (plan decisions) are displayed within text boxes. Text outside of boxes does not constitute plan decisions. It is background material, explanations, or descriptions of management approaches.

Ecological Sustainability and Diversity of Plant and Animal Communities

The Carson NF's vision is for ecosystems in the plan area to have ecological integrity and adaptive capacity. Ecosystems have integrity when their composition, structure, function, and connectivity are operating normally over multiple spatial and temporal scales. However, not every desired condition or acre has to meet the definition of ecological integrity, because some specific areas may not have the capability or because another concern, such as public safety is more important in a specific area.

Ecological restoration is an outcome of managing for desired conditions and may be necessary in degraded ecosystems. It is an intentional activity that initiates or accelerates ecosystem recovery with respect to its health (functional processes and productivity), integrity (species composition and community structure), and sustainability (resistance and resilience to disturbance) under current and future conditions. Restoration may not necessarily return an ecosystem to its former state, because contemporary constraints and conditions can cause it to develop along an altered trajectory.

In light of possible changes in species composition under the effects of climate change and with a focus on restoration, the plan components for the Carson NF's forest plan are designed to provide ecological conditions to sustain functional ecosystems based on a future viewpoint. Functional ecosystems are those that sustain critical ecological functions over time to provide ecosystem services including, clean air, fresh water, food, and fuel (provisioning ecosystem services); pollination, soil formation, and nutrient cycling (supporting ecosystem services); carbon storage, climate regulation, water filtration, and flood control (regulating ecosystem services); and educational, aesthetic, spiritual, cultural, and recreational experiences (cultural ecosystem services).

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Vegetation (VEG)

Desired conditions and other plan components (objectives, standards, and guidelines) related to the major vegetation communities are presented first in this plan, because they provide the setting or habitat that reflects not only healthy ecological systems, but also the social and economic considerations needed for long-term sustainability. Vegetation provides ecosystem services, including, climate regulation and soil stabilization (regulating), food and wood products (provisioning), nutrient cycling (supporting), and aesthetic and cultural values (cultural). Desired conditions and other plan components have been incorporated within each vegetation community for the needs and requirements of at-risk species, and, in some cases, general wildlife dependent on these major vegetation types.

Ecological desired conditions for terrestrial ecosystems are grouped by vegetation communities and described at multiple, nested scales when possible. Not all of these conditions will be achievable over the life of this plan, some may only be realized over long timeframes (up to several hundred years). Most vegetation communities correspond to a mapped Ecological Response Unit (ERU),[1] though it is appropriate to base management for a particular vegetation community on local conditions, including soils and other site-specific indicators. Small inclusions of other ERUs or ERU subtypes may be managed under a single prescription or evaluated separately at the project or activity level.

Where scientific information is available, desired conditions are based on the historical ecology of a vegetation community that can be inferred based on historic ranges of natural variability. They also reflect current conditions and stressors that may not have existed historically and also reflect social and economic desires in terms of the services that humans expect from ecosystems. Therefore, desired conditions do not necessarily represent reference conditions, since it may not be possible or desirable to return to a historic condition in all situations. Ranges of values presented as part of desired conditions reflect spatial variability in soils, elevation, or aspect, and provide managerial flexibility to meet local project objectives. Most acres should be managed towards the medium of the range, but representation across the range is equally desired. For those vegetation communities with seral state proportion tables, the quantitative information they contain reflects the desired condition narrative. Seral state percentages represent the approximate mid-point of the conditions described at the landscape scale, and are used primarily to compute overall system departure.[2]

Scale

Desired conditions for forest and woodland vegetation communities are described at three spatial scales where appropriate: landscape scale (1,000+ acres), mid-scale (10–1,000 acres), and fine-scale (less than 10 acres). Not enough science is available to provide descriptions at all scales for alpine tundra, bristlecone pine, montane subalpine grassland, and sagebrush communities. The landscape scale describes the “big picture” of desired conditions (Figure 5). A landscape area is comprised of ten or more mid-scale units. It is typically composed of variable

[1] An exception is Aspen which is not its own ERU, but occurs as a seral stage in several other ERUs. Forest, Shrub, and Scrub Riparian includes several riparian ERUs and may include additional areas based on site specific delineations. Wetland Riparian includes areas in addition to the Herbaceous Riparian ERU.

[2] Seral state departure is calculated at the landscape scale relying on remotely sensed information such as the Southwestern Region’s midscale mapping project. The minimum mapping unit is several acres.

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elevations, slopes, aspects, soils, plant associations, and disturbance processes. It includes multiple stands and natural openings and meadows. Contributions from all seral stages and low departure at the landscape scale are positive indicators of ecosystem condition. Where they are defined, seral state proportions apply at this scale.

Descriptions at the mid- and fine-scales provide additional detail necessary for guiding future projects and management activities. The mid-scale is composed of assemblages of fine-scale units which have similar biophysical conditions. The mid- and fine-scales in forests and woodlands include open grass-forb-shrub interspaces and uneven-aged stand conditions consisting of single and grouped trees of different vegetation structural stages, young to old. Species composition, age, structure, and distribution of individual trees (single, grouped, or aggregates of groups) are described at the fine-scale. Fine-scale desired conditions typically contain greater variability, which is desirable for providing heterogeneity at smaller spatial scales.

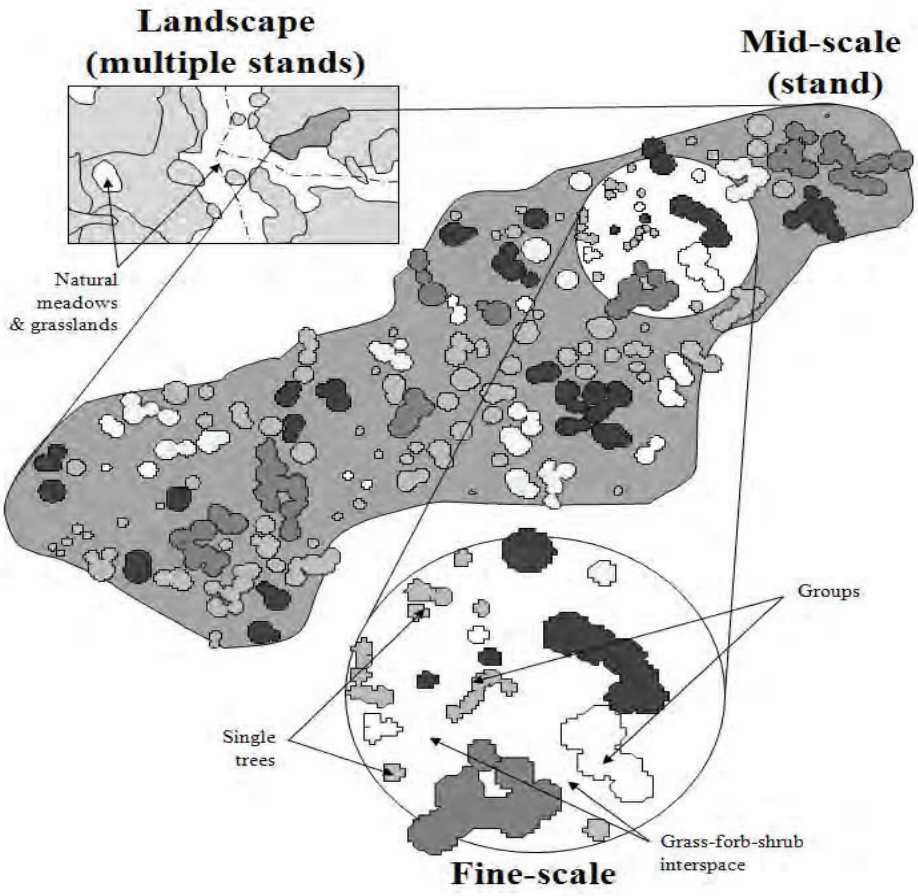

Figure 5. Example of the three spatial scales

When using this plan to develop project specifications, it is important to keep in mind that ecological desired conditions for all scales are applicable, regardless of the size of the project. Smaller projects need to consider the larger scales in terms of how the project contributes to the ecological desired conditions within the context of the larger-scale unit, and larger projects need

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to consider the design features required to ensure that the fine scale ecological desired conditions are achieved and maintained across the project area.

Consideration of scale is also important when evaluating progress toward ecological desired conditions, because the range of variability and distribution of conditions is affected by the scale at which they are viewed. For example, when ecological desired conditions are articulated at larger scales, they represent an average of fine-scale conditions across broader areas. This may make conditions appear less variable when they are evaluated at large scales, even though variability does exist at smaller scales.

All Vegetation Community Desired Conditions (FW-VEG-DC)

Landscape Scale (1,000 acres or greater)

1 Ecosystems contain a mosaic of vegetation conditions, densities, and structures. This mosaic occurs at a variety of scales across landscapes and watersheds, reflecting the disturbance regimes that naturally affect the area. Natural ecological cycles (i.e., hydrologic, energy, nutrient) facilitate the shifting of plant communities, structure, and ages across the landscape over time.

2 Ecosystems are resilient or adaptive to the frequency, extent, and severity of disturbances (e.g., human impacts, fire in fire-adapted systems, flooding in riparian systems, insects, pathogens, and climate variability). Natural disturbance regimes, including fire, are restored where practical and allowed to function in their natural ecological role. Wildfire maintains and enhances resources, including wildlife habitat for species associated with fire-adapted systems. Uncharacteristic wildland fire behavior is minimal or absent on the landscape.

3 Ecosystems maintain all of their essential components (i.e., plant density, species composition, structure, coarse woody debris, and snags), processes (i.e., disturbance and regeneration), and functions (i.e., nutrient cycling, water infiltration, and carbon sequestration), despite changing and uncertain future environmental conditions.

4 Old growth stands are well distributed, dynamic in nature, and shift on the landscape over time, as a result of succession and disturbance. Old growth attributes (e.g., multistory structure, large old trees, large trees with sloughing, exfoliating bark, snags, large downed logs, and other indicators of decadence) are present in all forest and woodland vegetation communities and provide habitat for associated species.

5 Ecological conditions affecting habitat quality, distribution, and abundance contribute to self-sustaining populations of native and desirable non-native plants and animals that are healthy, well distributed, genetically diverse, and connected (on NFS lands and to adjacent public and privately conserved lands), enabling species to adapt to changing environmental and climatic conditions. Conditions provide for the life history, distribution, and natural population fluctuations of the species within the capability of the ecosystem.

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6 Vegetation conditions allow for gradual transitions between vegetation communities. Transition zones shift in time and space due to ecological processes affecting site conditions (i.e., fire and climate).

7 Vegetation characteristics (e.g., tree density, litter depth) support favorable water flow and quality.

8 All age classes of deciduous trees (e.g., aspen, cottonwood, Gambel oak) are well represented and provide habitat for wildlife and rare plants.

9 Organic soil cover and herbaceous vegetation protect soil, facilitate moisture infiltration, and contribute to plant and animal diversity and ecosystem function.

10 Vegetation connectivity and abundance provide for genetic exchange, daily and seasonal movements of animals, and predator-prey interactions across multiple spatial scales, consistent with existing landforms and topography. Habitat configuration and availability and species genetic diversity allow long distance range shifts of plant and wildlife populations, in response to changing environmental and climatic conditions.

11 Native plant communities dominate the landscape, while invasive species are nonexistent or low in abundance and do not disrupt ecological function.

12 Native insect and disease populations are generally at endemic levels with occasional outbreaks. The scale of insect and disease outbreaks is usually restricted by variation among vegetation structures.

13 Habitats and refugia for rare, endemic, and culturally important species are intact, functioning, and sufficient for species persistence and recovery.

Mid-Scale (10-1,000 acres)

14 Diverse cool and warm season grasses, forb species, and litter are abundant and contiguous enough to support natural fire regimes, consistent with site potential. Herbaceous vegetation amount and structure (e.g., plant density, height, litter, seed heads) provide habitat to support wildlife and prey species.

15 Ecological conditions, as described in these desired conditions, provide suitable habitat for at-risk species.

16 The composition, density, structure, and mosaic of vegetation conditions reduce the threat of uncharacteristic wildfires to ecosystems and local communities.

17 Native plants provide nectar, floral diversity, and pollen throughout the seasons when pollinator species are active.

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Fine-Scale (10 acres or less)

18 At-risk plant community habitats (e.g., gypseous or limy sandstones, Mancos Shale soils, margins of springs, basalt lava flows/cinders, calcareous soil/alkaline clay, canyons/cliffs and ledges, granitic soils/igneous rocks, and sandstone rocks/soils) are present, to maintain self-sustaining populations of associated at-risk plant species.

19 The structure and function of the vegetation and associated microclimate/special features (e.g., snags, logs, large trees, interlocking canopy, cliffs, cavities, talus slopes, bogs, fens, rock piles, specific soil types, and wet areas) exist in adequate quantities within the capability of the forest, to provide habitat and refugia for at-risk species with restricted distributions.

20 Ecological conditions, as described in these desired conditions, provide habitat to support, sustain, and recover rare or endemic species.

21 Understory vegetation reflects or trends toward site potential[1], though it may vary considerably, reflecting a diversity of seral conditions.

All Vegetation Community Vegetation Standards (FW-VEG-S)

1 Collection of plant at-risk species shall be for research or scientific purposes only.

All Vegetation Community Guidelines (FW-VEG-G)

1 Management activities and special uses occurring within federally listed species' habitat should integrate habitat management objectives and species protection measures from the most recent approved USFWS recovery plan, to maintain the persistence or contribute to the recovery of that species.

2 Vegetation should provide for at-risk species' habitats, by minimizing disturbance, providing recovery strategies, and managing for desired levels of key structural elements (e.g., large old trees and snags, downed woody debris, denser vegetation structure, and soil structure) important for nesting, rearing, breeding, foraging, and dispersal, to maintain the persistence or contribute to the recovery of at-risk species.

3 For cavity nesting birds, snags should be retained at levels indicated in vegetation desired condition statements or in the largest diameter classes available, if available, and replaced at natural recruitment rates, to maintain the persistence of cavity nesting birds.

4 Naturally ignited fires (i.e., lightning-caused fires) that occur in fire adapted vegetation types should be managed for resource benefit when burning conditions facilitate progress

[1] As defined by the terrestrial ecosystem unit (TEU) potential in the "Terrestrial Ecosystem Survey of the Carson NF" (TES) (USDA FS Carson NF 1987).

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toward desired conditions and risks to firefighters, infrastructure, and the public can be mitigated.

Management Approaches for All Vegetation Communities

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider designing management activities to maintain:
    a) Large, old ponderosa pine trees with reddish-yellow, wide platy bark, flattened tops, moderate to full crowns, and large drooping or gnarled limbs (e.g., Thomson's age class 4, Dunning's tree class 5 and/or Keen's Tree Class 4, A & B).
    b) Mature trees with large dwarf mistletoe induced witches' brooms suitable for wildlife nesting, caching, and denning, except where retaining such trees would prevent the desired development of uneven-aged conditions over time.
    c) Large snags, partial snags, and trees (>18" dbh) with broken tops, cavities, sloughing bark, lightning scars >4 inches wide, and large stick nests.
    d) Gambel oak >8" diameter at root collar.
2. In areas of high vulnerability to climate change consider alternative management approaches to facilitate natural adaptation to changing conditions. Consider managing tree basal area at the low end of the range of desired conditions to mitigate water stress.
3. Consider using mechanical, chemical, and prescribed fire treatments to maintain existing meadow openings, expand openings by removing woody species from the perimeter, and create new openings.
4. When thinning, consider leaving snags, downed logs, and other woody components that collect drifting seeds, provide shade, reduce surface temperatures, retain moisture, and increase forage for ungulate grazing.
5. Consider using methods, such as fencing, aerating soil (decompacting soils), improving livestock grazing strategies, or strategically locating constructed waters or roads to protect and enhance grassland composition, structure, and productivity and soil function.
6. Consider working closely with the US Fish and Wildlife Service (USFWS) to provide for federally listed species' habitats, through minimizing disturbance, providing recovery strategies, and managing for desired levels of key structural elements (e.g., large old trees and snags, downed woody debris, denser vegetation structure, and soil structure) important for nesting, rearing, breeding, foraging, and dispersal.
7. Consider working collaboratively with federally recognized tribes, NM Department of Game and Fish (NMDGF), local governments, and other partners to plan and implement projects that will make progress toward desired conditions.

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8. Consider fostering partnerships with universities and other science organizations to develop concepts and tools applicable to vegetation management, as well as to identify research opportunities related to management activities aimed at ecosystem restoration.
9. Consider planning in cooperation with landowners, when proposed vegetation treatments are adjacent to private land.
10. Consider working with volunteer groups on projects that improve vegetation condition and ecosystem function.
11. Consider using models or other tools as they are developed to understand management impacts on carbon stocks and fluxes (changes over time).

Related Plan Content for All Vegetation Communities

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

Below are those resources which have been identified as the most important related resources to this section. It is recommended that you look at these, as well as other resources not identified below that you deem to be important to your specific project.

Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Alpine and Tundra (VEG-ALP)

The Alpine and Tundra (ALP) vegetation community is present on only 9,996 acres on the Carson NF in the Questa and Camino Real Ranger Districts. It occurs on sites above 10,600 feet and supports sparse, low-growing vegetation as a result of unstable substrates, exposure to high winds, and a short growing season. On gradual to moderate slopes, flat ridges, valleys, and basins, where soils are fairly stable, the vegetation community may support tundra systems with diverse alpine flora, characterized by perennial, rhizomatous, sod-forming sedges, and prostrate and mat-forming forbs with thick rootstocks or taproots. Fire is not a significant disturbance in these communities, though plants and soils are very sensitive to impacts from grazing and recreation.

Occupying the highest and coldest peaks and ridges, ALP is an important source of snow accumulation and water production (regulating and provisioning ecosystem services). Designated wilderness areas make up 86% of ALP, but some areas, such as Kachina Peak in Taos Ski Valley and Wheeler Peak, are subject to heavy recreation from hikers, backpackers, and skiers (cultural ecosystem services). Cold temperatures are a defining feature that makes ALP especially vulnerable to changes in climate. The Carson NF plays a significant role in the sustainability of ALP in the broader landscape and may provide an important refuge for dependent organisms, as ALP on the forest is relatively intact.

ALP Desired Conditions (FW-VEG-ALP-DC)

1 Desired seral stage proportions for ALP at landscape scale:

Class	Description	Landscape Proportion (%)
Early	Early development	5
Herbaceous	All herb types	95
Treed	Uncharacteristic tree cover; *contemporary landscapes only*	0

2 The ecological attributes and processes that provide habitat for native biota and/or historic and cultural values are maintained.

3 The patch distribution of rock and herbaceous cover is finely patterned with about 60% total vegetation cover.

4 Tree cover is typically less than 10%. Completely barren or rocky areas make up only a small percentage of the vegetation community.

5 Endemic levels of disturbances (e.g., insects, diseases, fire, snow, and wind) maintain a functioning ecosystem that contains all its components, processes, and conditions. Plants, animals, and geologic features that contribute to ecological diversity and uniqueness are maintained.

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6 Alpine ecosystems occupy harsh high elevation sites, resulting in short stature and relatively slow growth for both shrubs and herbaceous species. Wetland communities are present in snowloaded depressions and are dominated by plane leaf willow, snow willow, and artic willow. Alpine fellfields are free of snow in the winter and dominated by alpine clover, tufted hairgrass, and Bellardi bog sedge, to allow for the persistence of at-risk species.

7 Key features (e.g., boulder fields and talus slopes) that are necessary for alpine dependent plant and animal species (e.g., alpine larkspur, marmots, pika, and bighorn sheep) are well distributed and undisturbed, within the capacity of the vegetation community.

8 ALP continues to be resilient to natural and human-caused impacts.

ALP Guidelines (FW-VEG-ALP-G)

1 Trail construction and maintenance in ALP should avoid at-risk plants and disturbance of important key habitat features (e.g., rock outcrops, willows, and talus slopes) for at-risk species and other alpine dependent species (e.g., yellow-bellied marmot and American pika), to maintain the persistence of native species.

2 To assist breeding and nesting success of at-risk species, adaptive seasonal use or percent utilizations for livestock grazing should be considered and based on the best available information, as well as on site-specific factors (e.g., topography and available habitat).

At-risk Species for ALP

- American peregrine falcon
- White-tailed ptarmigan (Questa and Camino Real RDs)
- Alpine larkspur (Questa and Camino Real RDs)

Related Plan Content for ALP

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To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of

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ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Montane and Subalpine Grasslands (VEG-MSG)

Montane and Subalpine Grasslands (MSG) cover 125,351 acres across every ranger district, except the Jicarilla. They are naturally fragmented, occurring as meadows and openings in spruce fir, mixed conifer, and ponderosa pine forests, between 8,000 and 10,000 feet elevation. They are often intermingled with the Wetland Riparian vegetation community. A diverse mix of grass and forb species may be present, varying according to soil type, soil moisture, and temperature. Dominant species may include Arizona fescue, mountain muhly, various sedges, Parry's oatgrass, pine dropseed, Thurber's fescue, and blue grama. Grassland openings are created and maintained by a combination of tree-limiting site conditions (e.g., soils and climate) and disturbance (mainly fire). Trees may occur along the periphery of meadows and some shrubs may be present, though canopy cover was historically no more than 10% for either. Hydrology is closely tied to snowmelt, and these meadows are seasonally wet, but do not typically experience flooding. Grassland communities are susceptible to channel and gully erosion and their size and number have been reduced, as a result of encroaching trees and shrubs and livestock grazing. Invasive species infestation is a concern, and introduced Kentucky bluegrass dominates native species in some areas.

Expansive grasslands like Valle Vidal and Lucero Lakes provide important habitat, forage, and hydrologic benefits (provisioning and regulating ecosystem services). Smaller meadows and herbaceous riparian areas create unique habitats within other communities and contribute to biodiversity and livestock production (provisioning ecosystem services). MSG has been altered from historic condition by natural and anthropogenic impacts. Bunchgrasses are less common, trees and shrubs have displaced herbaceous cover, and reduced vegetation cover and ground disturbing activities have altered hydrologic function and increased erosion.

MSG Desired Conditions (FW-VEG-MSG-DC)

1 Desired seral stage proportions for MSG at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Recently burned; sparsely vegetated; early development grassland	20
Herbaceous	All grass and forb types; mid to late development. Perennial-mixed grasses, <10% shrub/tree cover, >10% grass cover	80
Treed	Tree or shrub invaded; *contemporary landscapes only*	0

Landscape Scale (1,000 acres or greater)

2 MSG is open and grassy with tree and shrub canopy cover of less than 10% each. Vegetation is dominated by native herbaceous plants. Regeneration, seed head production, and a balance of grass and forb species, including warm and cool season species, occur in most years and within the capability of soils. The structure, composition,

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and distribution of vegetation are within the range of natural variability and occur in natural patterns of abundance and diversity, varying with soil type and microclimate.

3 Herbaceous vegetation cover (herbaceous cover, decaying debris, and leaf litter) is maintained at levels that contribute to suitable hydrologic function, soil stability, and nutrient cycling, while providing food and cover for at-risk species and other wildlife species. A diversity of native grass and forb species and adequate plant litter reduce compaction and erosion.

4 Soil function is sustained. Soils are permeable and capable of infiltrating water to reduce overland flows during precipitation events and allow for burrowing by small mammals (e.g., Gunnison's prairie dog, ground squirrels, and masked shrew). Adequate water infiltration discourages arroyos, gullies, and head cuts from forming in drainages. Existing arroyos and gullies are stabilizing and recovering.

5 Natural surface drainages and subsurface flow patterns are not altered by human or animal trampling, to assure water flow into connected waterbodies or streams.

6 Fire plays its natural role on the landscape. Vegetation height and density carry fire and support the historic fire return interval. Fires are low-intensity but with high aboveground consumption. Fire return intervals are influenced by the fire regime in adjoining vegetation types and range from 1 to 35 years (Fire Regime II). Introduced annuals do not cause changes to the natural fire regime.

7 Biological soil crusts are present and improve nutrient cycling and stabilize soils, especially on sandier soils.

Mid-Scale (10-1,000 acres)

8 The composition, structure, and distribution of native vegetation reflect a mix of early, middle, and late seral stages. Early seral stages will typically contain more forbs, older stages are dominated by more grasses and fewer forbs. Native plant species are present in all age classes and are healthy, reproducing, and persisting.

9 Depending on soil type, bare soil is no more than 30% by area and is most often less than 10%. Basal vegetation varies between 30-75% groundcover. Organic litter varies between 15 and 50% cover. Vegetation composition averages 40-60% grass, and 10-30% forbs.

10 Vegetation conditions provide hiding, nesting, and thermal cover in contiguous blocks for wildlife, including small mammals and songbird nesting. Soil condition, as defined by basic soil functions (e.g., stability, soil hydrology, and nutrient cycling), has the capacity to support the diversity of associated species (e.g., western burrowing owl, prairie dog, and masked shrew).

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Fine Scale (10 acres or less)

11 Biological diversity is high in MSG. Within site capability, a mosaic of vegetation density exists across the landscape, ranging from densely vegetated areas, to provide cover for the small mammals, ground-nesting birds, and neonate ungulates, to bare areas that result from natural processes, such as freeze–thaw action or burrowing by small mammals.

12 Fine scale features of rock piles and wet areas that are necessary to support at-risk species are well distributed, within the capacity of the vegetation community.

13 Cool season grasses and forbs provide nutritional forage; while shrubs and standing grass growth from the previous year provide adequate hiding cover (over 6") to protect wildlife from predation.

14 Grasslands are connected (consistent with the distribution of Mollisol soils) and are not fragmented.

MSG Standards (FW-VEG-MSG-S)

1 Heavy equipment and log decks shall not be staged in montane meadows.

MSG Guidelines (FW-VEG-MSG-G)

1 New stock tanks and wildlife waters should be placed in locations that reduce concentrations of grazing animals and subsequent vegetation and soil effects in open grasslands and meadows.

At-risk Species for MSG

- Black-footed ferret
- Northern leopard frog
- American peregrine falcon
- Western burrowing owl
- Gunnison's prairie dog
- Masked shrew
- Alpine larkspur (Questa and Camino Real RDs)

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Related Plan Content for MSG

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To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Bristlecone Pine (VEG-BP)

The Bristlecone Pine (BP) vegetation community is rare on the Carson NF, found on less than 5,000 acres scattered across the Questa and Camino Real ranger districts. BP occurs above 10,500 feet and favors south-facing, dry, rocky ridges and slopes. BP is the dominant species, though Douglas-fir, Engelmann spruce, and ponderosa pine may also be present. The canopy is open and patchy and the understory is typically sparse.

Bristlecone pine trees have unique structural and physiological qualities that make them stress tolerant and allow them to occupy sites that other species cannot. They provide unique ecological functions on these sites, including slope stability, snow retention, and post-fire recovery (regulating ecosystem services). Their presence on harsh sites influences watershed hydrology, facilitates succession, provides habitat, and maintains forested cover on sites that may otherwise become treeless (regulating and provisioning ecosystem services). As some of the oldest trees on the Carson NF they are valued for their charismatic gnarled forms and their longevity (cultural ecosystem service).

BP Desired Conditions (FW-VEG-BP-DC)

1	Desired seral stage proportions for BP at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Recently burned; grass, forb, shrub, and seedling/sapling size trees	20
Mid-Closed	Small trees, closed canopy; *contemporary landscapes only*	0
Mid-Open	Small trees, open canopy	20
Late-Open	Medium and large trees, open canopy	60
Late-Closed	Medium and large trees, closed canopy; *contemporary landscapes only*	0

Landscape Scale (1,000 acres or greater)

2	BP is resistant to white pine blister rust or resilient when it occurs.
3	Trees persist despite changing and uncertain future environmental conditions and continue to provide slope stability, snow retention, and watershed hydrology.
4	Native grasses and forbs are present in the understory, but cover is generally sparse and discontinuous. However, plant litter (e.g., leaves, needles) and coarse woody debris are present in sufficient quantity to resist accelerated soil erosion and promote nutrient cycling and water retention.
5	Fire is rare in BP (especially at higher elevations) and not stand replacing. Stands with continuous understory may carry low-severity surface fire (mainly at lower elevations).

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Bristlecone pine establishment is rare as regeneration requirements are rarely met, but may be encouraged following fire that removes competition from other species.

Mid-Scale (10-1,000 acres)

6 At the mid-scale, tree distribution is patchy in BP, with an open canopy, influenced by disturbance, exposure, soil type, aspect, and site productivity. The majority of trees are large, late seral and widely spaced, but all age classes are represented and provide a reliable source of replacement.

7 Bristlecone pine is the dominant and most common tree species, though other occasional species may occur.

Fine Scale (10 acres or less)

8 Moist soil conditions (e.g., thick litter layers, wet areas, coarse woody debris, and decaying debris) are maintained and well distributed, within the capacity of the vegetation community for at-risk species.

BP Guidelines (FW-VEG-BP-G)

1 Planting should use white pine blister rust resistant trees from an appropriate seed transfer zone, to reduce spread of disease.

At-risk Species for BP

- Masked shrew

Management Approaches for BP

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider creating a mosaic of mixed age classes and regeneration opportunities across the landscape to retain a range of bristlecone attributes in the area while white pine blister resistant selection occurs rapidly in younger stands and slowly in older stands.

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Related Plan Content for BP

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Spruce Fir Forest (VEG-SFF)

The Spruce-Fir Forest (SFF) vegetation community occupies the coldest and wettest forested slopes, ridges, and valleys on the Carson NF. It covers nearly 290,000 acres, at elevations between 9,000 and 11,500 feet, bounded at upper elevations by ALP and transitioning to mixed conifer at lower elevations. It occurs in all districts, except the Jicarilla. Engelmann spruce, western subalpine fir, and corkbark fir are the dominant species. Near timberline, firs are less abundant, while at lower elevations mixed conifer species may be present. Below 10,500 feet, quaking aspen occurs following disturbances and may be dominant or codominant. On the Carson NF, common understory species include whortleberry, huckleberry, common juniper, Oregon boxleaf, spruce-fir fleabane, Jacob's-ladder, Parry's goldenrod, and strawberry. As a result of past logging, fewer large trees exist now than what occurred historically.

The disturbance frequency in SFF is both historically and currently low, but the natural disturbance regime of SFF includes infrequent, but high-intensity events like windthrow, fire, and spruce beetle epidemics. The current disturbance regime in SFF is probably not outside the historic norm.

SFF covers the highest forested peaks and slopes on the Carson NF. The cold, dark forests accumulate and retain deep snowpack late into the spring, regulating snowmelt, stream flow, and water infiltration throughout the year (regulating ecosystem services). Due to the low product value and the difficulty of building roads, some areas of SFF were not logged prior to 1950. Because these forests were neither roaded nor cut, 27% of SFF have been designated as wilderness (cultural ecosystem service). Other areas of SFF were heavily logged in the past and still lack trees in the oldest age classes. SFF at lower elevations may include some Douglas-fir, which is preferred as fuelwood by local communities (provisioning ecosystem service). Medicinal osha is collected from aspen stands and other wet areas in SFF (provisioning ecosystem service). Douglas fir for fuelwood preferred in SFF by local communities (provisioning ecosystem service).

SFF Desired Conditions (FW-VEG-SFF-DC)

1	Desired seral stage proportions for SFF at mid-scale:

Class	Description	Mid-scale Proportion (%)
Non-Tree	Non-tree: Recently burned; grass, forb, and shrub types	9
Aspen	All aspen, deciduous tree mix, and evergreen-deciduous mix tree types	11
Early	Seedling/sapling and small trees, all cover classes	21
Mid	Medium trees, all cover classes	14
Late	Large trees, closed canopy	45

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Landscape Scale (1,000 acres or greater)

2 SFF is composed of multiple species of varying ages in a mosaic of seral stages and structures. Its arrangement on the landscape is similar to historic patterns, with groups and patches of variably-sized and aged trees and other vegetation. Tree canopies are generally more closed than in mixed conifer forests.

3 Vigorous trees dominate, but older declining, top-killed, lightning-scarred, and fire-scarred trees are a component that provide for snags and coarse woody debris and are well-distributed throughout the landscape. The number of snags and amount of downed logs (>12 inch diameter at mid-point, >8 feet long) and coarse woody debris (>3 inch diameter) vary by seral stage.

4 Old growth structure generally occurs over large areas as stands or patches.

5 Corkbark fir is present with the ability to reproduce on late-seral sites appropriate for the species.

6 Natural openings and subalpine meadows are well distributed throughout SFF and are maintained by natural processes. They provide sufficient quality habitat for at-risk species to persist.

7 The understory consists of native grasses, forbs, sedges, mosses, liverworts, and/or shrubs.

8 In the lower spruce-fir type, mixed severity fires (Fire Regime III) occur infrequently. In the upper spruce-fir type, high severity fires (Fire Regime IV and V) occur very infrequently.

Mid-Scale (10-1,000 acres)

9 At the mid-scale, the distribution of groups and patches varies, depending on disturbance, elevation, soil type, aspect, and site productivity. Patches are primarily even-aged with variation in species composition and size, but are mostly in the hundreds of acres. Disturbances of thousands of acres are rare. There may be frequent small disturbances resulting in groups and patches of tens of acres or less. Disturbance-created grass, forb, and shrub openings may comprise up to 100% of the mid-scale area, depending on the local disturbance history.

10 Tree density ranges from 20 to 250 square feet of basal area per acre, depending on disturbance history and site productivity. Generally, there are 13 to 30 snags greater than 8 inches in diameter per acre and 1 to 3 of those snags are 18 inches or greater in diameter. Lower snag densities within those ranges are associated with early seral states and higher densities are associated with late seral states. Coarse woody debris ranges from 5 to 30 tons per acre for early-seral stages; 30 to 40 tons per acre for mid-seral stages; and 40 tons per acre or greater for late-seral stages.

11 Aspen is occasionally present in large patches, providing habitat for organisms that depend on it (e.g., northern goshawk, cavity nesters including woodpeckers and owls, and

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a variety of fungi and microorganisms). Where they naturally occur, all age classes of aspen are present in even-aged groups or patches and are regenerating and vigorous. A diverse understory comprised of native herbaceous and shrub species has a variety of seral and age classes and is vigorous and regenerating.

12 Localized, accelerated soil erosion may occur following high-severity fires, but not to the extent that it results in long-term impairment to connected waters downstream or causes loss of soil productivity over major portions of the 5th or 6th code watershed.

13 Uneven-aged groups and patches comprise about 20% of SFF and provide for wildlife species that need multi-storied canopies with dense low- to mid-canopy layers.

14 Forest conditions in goshawk post-fledging family areas (PFAs) are generally consistent with surrounding forest conditions, except these forests contain 10-20% greater tree density (basal area) than goshawk foraging areas and the general forest. Goshawk nest areas have forest conditions that are multi-aged, but are dominated by large trees with relatively denser canopies than other areas in SFF.

15 The wildland urban interface (WUI) has strategically located areas in a more open condition than occur in the surrounding general forest. Grass/forb/shrub vegetation and aspen may make up a much larger percentage of the WUI than they do in the general forest. Structures in the WUI are surrounded by grassy openings with very few to no trees such that available fuels support surface fires.

Fine Scale (10 acres or less)

16 Mid- to old-aged trees grow tightly spaced with interlocking crowns. Trees are generally of the same height and age in early group/patch development, but may be multi-layered in late development. Small openings (gaps) are present as a result of localized disturbances (e.g., wind, disease).

17 Moist soil conditions (e.g., thick litter layers, wet areas, coarse woody debris, and decaying debris) are maintained and well distributed, within the capacity of the vegetation community for at-risk species.

SFF Guidelines (FW-VEG-SFF-G)

1 Soil and vegetation disturbance from management activities should occur in confined, localized areas, where impacts to long-term soil and vegetation condition are avoided.

2 A minimum of 6 nest areas (known and replacement) should be located per goshawk territory, to maintain the persistence or contribute to the recovery of at-risk species. Goshawk nest and replacement nest areas should generally be located in drainages, at the base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.

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3	Goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites, to maintain the persistence or contribute to the recovery of at-risk species.
4	In goshawk foraging areas and PFAs, groups of 6 reserve trees should be retained within management created openings greater than 0.5 acre, to maintain the persistence or contribute to the recovery of at-risk species.
5	Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30, to maintain the persistence or contribute to the recovery of at-risk species.

At-risk Species for SFF

- Canada lynx
- Northern goshawk
- Masked shrew
- Pale Townsend's big-eared bat
- Robust larkspur

Related Plan Content for SFF

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Aspen (VEG-ASP)

On the Carson NF, aspen (ASP) occurs as an early seral component of other vegetation communities. It does not persist indefinitely, but is dependent on disturbance for its regeneration and therefore its distribution is expected to shift spatially across the landscape over time. However, when a conifer seed source is unavailable, ASP may persist as a seral state for decades to centuries. ASP is adapted to a wider range of environmental conditions than most of the plant species it is associated with and spans elevations from ponderosa to spruce and fir forests. Where they occur, ASP stands provide important habitat that is moister and cooler, water storage and recharge, nutrient cycling, reduced fire intensity and slowed fire spread. They provide a disproportionately large ecological benefit and tend to have higher biodiversity and a greater abundance of plants, fungi, invertebrates, mammals, and cavity-nesting bird species than the surrounding forest (supporting and provisioning ecosystem services). Even small ASP stands provide refugia. The soft wood of decaying stems and snags provides valuable habitat, particularly for cavity-dependent species.

ASP stands are single storied, or more commonly, multi-storied depending on disturbance history and local stand dynamics. The canopy is usually closed. Understory structure may be complex with multiple shrub and herbaceous layers, or simple with just an herbaceous layer. The herbaceous layer may be dense or sparse, dominated by graminoids or forbs. Some of the species typically found associated with ASP include western yarrow, violet, and several grasses and sedges. The understory may also contain shrubs, including creeping barberry, Oregon boxleaf, and mountain snowberry. ASP stands provide important habitat for wildlife and plants.

They also have high scenic value and provide opportunities for recreation and cultural or spiritual experiences (cultural ecosystem services). The green leaves and white trunks provide a natural contrast to the surrounding forest. ASP attracts both residents and visitors to the Carson NF to enjoy abundant wildlife, shade, and scenery (cultural ecosystem services). During fall months, the landscape is transformed into a patchwork of green and gold, drawing fall color lovers from around the region (cultural ecosystem services). ASP provides unique seasonal opportunities for hiking, biking, bird watching, nature exploration, picnicking and other recreation activities (cultural ecosystem services). On the Carson NF, ASP is also an important source of building material (i.e., latillas and coyote fences), as well as fuelwood for local forest dependent communities (provisioning and cultural ecosystem services). Aspen bark is used as a medicinal tea (provisioning ecosystem service).

At lower elevations on the Carson NF where fire regimes have been disrupted (MCD and MCW), aspen is slightly to very underrepresented relative to reference conditions. It is well represented in the higher elevation SFF vegetation community, but many of the stands that exist are aging and being overtaken by conifers.

ASP Desired Conditions (FW-VEG-ASP-DC)

Landscape Scale (1,000 acres or greater)

1	ASP occurs as a slowly shifting mosaic and in natural patterns of abundance and distribution across its range, with new ASP clones establishing over time. New openings

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provide adequate regeneration so that some old, declining stands may be allowed to transition to conifer dominance.

2 Fire intervals in vegetation communities where ASP is a component are similar to reference conditions and the size, age, and spatial extent of ASP stands reflect large-scale disturbance patterns and processes.

3 Stands with the potential for aspen are affected by disturbances that may include fire, mechanical treatments, insects, pathogens, and abiotic factors. Collectively, these agents of change promote healthy tree regeneration, decadence, and nutrient cycling and in turn contribute to high quality wildlife habitat and biodiversity.

4 Snags, downed ASP, and woody debris are scattered across the landscape and provide habitat for a variety of wildlife species (e.g., small mammals, reptiles, amphibians, and birds), while contributing to efficient nutrient cycling.

Mid-Scale (10-1,000 acres)

5 ASP in multistoried patches may comprise 10 to 100% of the mid-scale area, depending on local disturbance history.

6 ASP is successfully regenerating and recruiting into older and larger size classes.

7 Understory vegetation consists of shrubby or herbaceous species, providing forage and cover for wildlife and livestock.

Fine Scale (10 acres or less)

8 Size classes have a natural distribution, with the greatest number of stems in the smallest classes.

9 Moist soil conditions (e.g., thick litter layers, wet areas, coarse woody debris, and decaying debris) are maintained and well distributed, within the capacity of the vegetation community for at-risk species.

ASP Guidelines (FW-VEG-ASP-G)

1 To provide necessary habitat characteristics for wildlife species, aspen trees 10” or greater dbh (both live and dead) should be protected during management activities, except where they may pose a risk to public safety, fences, or regeneration efforts.

2 A minimum of 6 nest areas (known and replacement) should be located per goshawk territory, to maintain the persistence or contribute to the recovery of at-risk species. Goshawk nest and replacement nest areas should generally be located in drainages, at the

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base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.

3 Goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites, to maintain the persistence or contribute to the recovery of at-risk species.

4 Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30, to maintain the persistence or contribute to the recovery of at-risk species.

At-risk Species for ASP

- Canada lynx
- American peregrine falcon
- Northern goshawk
- Masked shrew
- Robust larkspur

Management Approaches for Aspen

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider stimulating aspen growth and managing for pure aspen stands in high elevation forested wildland urban interface (WUI) forests to help mitigate fire hazard.
2. Consider using small patch clear-cuts (< 5 ac), conifer removal, and wildland fire to stimulate aspen sprouting in areas that currently have or previously supported aspen.
3. Consider strategies to promote aspen regeneration, such as jackstrawing, planting, public education, temporary exclosure fencing, and improving the forage and browse in the surrounding area to diffuse browse pressure.
4. Consider selective removal of fire sensitive species (i.e., white fir) and small diameter trees. Retain large ponderosa pine and Douglas-fir.
5. Consider monitoring to quantify the size and distribution of aspen patches required to overcome existing levels of browse pressure.

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Related Plan Content for ASP

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Mixed Conifer with Aspen (VEG-MCW)

The Mixed Conifer with Aspen (MCW) vegetation community is found in the cooler wetter sites within the mixed conifer life zone, where fires are less frequent and are characterized by more mixed to high severities. The distinguishing feature of MCW is the presence of quaking aspen in a post-disturbance seral state. On the Carson NF, MCW is found on about 131,000 acres at elevations between 7,000 and 10,000 feet. It is most common in the eastside ranger districts, and does not occur in the Jicarilla Ranger District.

Dominant and codominant vegetation in MCW varies by elevation and moisture availability. Ponderosa pine occurs incidentally or is absent, while Douglas-fir, southwestern white pine, white fir, and Colorado blue spruce are dominant or codominant. Oregon boxleaf is characteristic in the understory, but a wide variety of other shrubs, graminoids, and forbs may be present, depending on soil type, aspect, elevation, disturbance history, and other factors. In the aspen component, conifer species may or may not be present in significant proportions, depending on successional status.

MCW are productive sites that grow large Douglas-fir trees that are valued as timber and fuelwood (provisioning ecosystem services). Selective harvesting during the last century has shifted stand structure and composition, favoring dense, moderate-sized, true firs. Fire exclusion has had an impact by reducing opportunities for aspen establishment. Aspen in MCW is slightly underrepresented and young aspen stands are particularly rare. When combined with predicted warming and drying, the current stand conditions are likely to become increasingly susceptible to insects, disease, and large, uncharacteristic wildland fires in the future.

MCW covers many areas that provide important recreational opportunities including Sipapu and Red River ski resorts, the South Boundary mountain bike trail, and Elephant Rock, Cabresto Lake, and Trout Lakes areas (cultural ecosystem services). Designated wilderness areas make up 14.5% of MCW (cultural ecosystem service). There are good hunting and osha collecting opportunities in MCW forests (cultural and provisioning ecosystem services).

MCW Desired Conditions (FW-VEG-MCW-DC)

1	Desired seral stage proportions for MCW at mid-scale:

Class	Description	Mid-scale Proportion (%)
Non-Tree	Non-tree: Recently burned; grass, forb, and shrub types	1
Aspen	All aspen, deciduous tree mix, and evergreen-deciduous mix tree types	21
Early-Mid	Seedling/sapling, small trees and medium trees, all cover classes	29
Late-Closed	Large trees, closed canopy	49
Late-Open	Large trees, open canopy; contemporary landscapes only	0

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Landscape Scale (1,000 acres or greater)

2 MCW is composed of variable species of varying ages in a mosaic of seral stages and structures. Its arrangement on the landscape is similar to historic patterns, with groups and patches of variably-sized and aged trees and other vegetation. A range of seral states, each characterized by distinct dominant species composition and biophysical conditions, are distributed across the landscape, such that each state adequately supplies the subsequent states progressively through time. Canopies in older seral stages are generally more closed than in dry mixed conifer.

3 Mixed severity fire (Fire Regime III) is characteristic at the lower elevations of this type (every 50 to 100 years). High-severity fires (Fire Regimes IV & V) occur less frequently and are more likely to occur at higher elevations.

4 Old growth structure generally occurs over large areas as stands or patches.

5 Vigorous trees dominate, but older declining, top-killed, lightning-scarred, and fire-scarred trees are a component. Declining trees are well distributed throughout the landscape and provide for snags, and coarse woody debris. Number of snags and the amount of downed logs (greater than 12-inch diameter at mid-point and greater than 8 feet long) and coarse woody debris (greater than 3-inch diameter) vary by seral stage.

6 Dwarf mistletoe infestations may be present in stands with a Douglas-fir or spruce component, but rarely in other tree species. Infestation size, severity, and amount of mortality varies among infested stands. Witches' brooms may be scattered throughout the infestations, providing structural diversity in the stand and improved foraging and nesting habitat for wildlife species, such as small mammals (e.g., tree squirrels) and raptors (e.g., goshawks and red-tailed hawks).

7 An understory consisting of native grass, forbs, and/or shrubs is present. Mosses and lichens are prevalent and function to recycle soil nutrients.

Mid-Scale (10-1,000 acres)

8 At the mid-scale, the distribution of groups and patches varies in MCW, depending on disturbance, elevation, soil type, aspect, and site productivity. Patch sizes vary, but are frequently in the hundreds of acres, with rare disturbances in the thousands of acres. Groups and patches of tens of acres or less are relatively common. A mosaic of groups and patches of trees, primarily even-aged, and variable in size, species composition, and age is present. Disturbance-created grass, forb, shrub openings may comprise 10-100% of the mid-scale area, depending on the local disturbance history.

9 Tree density ranges from 20 to 180 square feet of basal area per acre, depending on disturbance history and site productivity.

10 Generally, there are an average of 20 snags greater than 8 inches in diameter per acre and 1 to 5 of those snags are 18" or greater in diameter. Lower snag densities are associated with early seral stages and higher densities are associated with late seral

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stages. Coarse woody debris, including downed logs, ranges from 5 to 20 tons per acre for early-seral stages; 20 to 40 tons per acre for mid-seral stages; and 35 tons per acre or greater for late-seral stages.

11 Basal area is 10-20% higher in some areas than in the general forest. Examples include goshawk post-family fledgling areas (PFAs) and north-facing slopes. Goshawk nest areas have forest conditions that are multi-aged, but are dominated by large trees with relatively denser canopies than other areas in the wet mixed conifer type.

12 The prevalence of aspen is dependent on seral stage, but is occasionally present in large patches, providing habitat for organisms (e.g., cavity-nesting birds, fungi, and microorganisms) that depend on it. Where they naturally occur, all age classes of aspen are present in even-aged groups or patches and are regenerating and vigorous. A diverse understory comprised of native herbaceous and shrub species has a variety of seral and age classes and is vigorous and regenerating.

13 Fire behavior is often smoldering low-intensity surface fire, with single tree and isolated group torching. Due to the presence of ladder fuels, when environmental conditions align fires transition rapidly into the canopy as passive or active crown fire behavior with conifer tree mortality up to 100% across mid-scale patches (10-1,000 acres). High-severity fires generally do not result in areas of mortality exceeding 1,000 acres. Other more frequent disturbances affect smaller areas.

14 Uneven-aged groups and patches, comprising about 20% of MCW, provide habitat for species (e.g., black bear and bobcat) that need multistoried canopies with dense low- to mid-canopy layers.

15 The wildland urban interface (WUI) is dominated by early-seral fire-adapted species growing in a more open condition than in the surrounding general forest. These conditions result in fires that burn primarily on the forest floor and rarely spread as crown fire.

Fine Scale (10 acres or less)

16 In mid-aged and older forests, trees are typically variably-spaced with crowns interlocking (grouped and clumped trees) or nearly interlocking. Trees within groups can be of similar or variable species and ages.

17 Small openings (gaps) are present as a result of disturbances and provide wildlife and plant species habitat.

18 Moist soil conditions (e.g., thick litter layers, wet areas, coarse woody debris, and decaying debris) are maintained and well distributed, within the capacity of the vegetation community for at-risk species.

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MCW Guidelines (FW-VEG-MCW-G)

1 Slash piles should be retained across the landscape for several years, to increase small mammal occupancy in areas where coarse woody debris is deficient and provide nesting habitat and cover for associated wildlife species (e.g., turkeys, birds, small mammals, reptiles, and invertebrates).

2 If slash is scattered, it should be at a height that still allows big game movement.

3 A minimum of 6 nest areas (known and replacement) should be located per goshawk territory, to maintain the persistence or contribute to the recovery of at-risk species. Goshawk nest and replacement nest areas should generally be located in drainages, at the base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.

4 Goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites, to maintain the persistence or contribute to the recovery of at-risk species, to maintain the persistence or contribute to the recovery of at-risk species.

5 In goshawk foraging areas and PFAs groups of 6 reserve trees should be retained within management created openings greater than 0.5 acre, to maintain the persistence or contribute to the recovery of at-risk species.

6 Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30, to maintain the persistence or contribute to the recovery of at-risk species.

At-risk Species for MCW

- Mexican spotted owl
- American peregrine falcon
- Northern goshawk
- Masked shrew
- Pale Townsend's big-eared bat
- Robust larkspur

Related Plan Content for MCW

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Mixed Conifer with Frequent Fire (VEG-MCD)

The Mixed Conifer with Frequent Fire (MCD) vegetation community occupies the warmer, drier sites within the mixed conifer life zone. It covers nearly 183,000 acres on the Carson NF at elevations of 6,000 to 10,000 feet. It is present on every district except the Jicarilla RD. MCD is distinguished from MCW by having a more frequent, lower severity fire regime and aspen as a minor component found within dissimilar inclusions, rather than as a seral stage. MCD is dominated by ponderosa pine, with some Douglas-fir and white fir. When fire is episodic and low- to mixed-severity, both mature and juvenile white fir are killed and an open forest structure is maintained with fire adapted ponderosa pine and Douglas-fir in the overstory. Gambel oak, creeping barberry, and mountain snowberry are common in the understory. The natural fire regime in MCD is highly departed and has resulted in dense, homogeneous stands with a shift toward more shade tolerant tree species that are not adapted to fire.

Dense stands outcompete aspen which would have historically been a minor and dispersed component in MCD, but is now very underrepresented. Dense stands are susceptible to insects and disease and much more at risk from large, high severity fire. There are many fewer openings that support grass, forb, and oak cover than there would have been historically, which results in less forage for wildlife and livestock grazing. Many forest dependent communities are near MCD forests and rely on them for fuelwood and other products, like osha (cultural and provisioning ecosystem services).

MCD Desired Conditions (FW-VEG-MCD-DC)

1	Desired seral stage proportions for MCD at mid-scale:

Class	Description	Mid-scale Proportion (%)
Non-Tree-Early	Recently burned; grass, forb, and shrub types; seedling/sapling size trees	9
Mid-Closed	Small trees, closed canopy	3
Mid-Open	Small trees, open canopy	3
Late-Closed	Medium to large trees, closed canopy	25
Late-Open	Multi-storied with open canopy, largest trees are medium to large	60

Landscape Scale (1,000 acres or greater)

2	MCD is composed of multiple species of varying ages in a mosaic of seral stages and structures. Its arrangement on the landscape is similar to historic patterns, with groups and patches of variably-sized and aged trees and other vegetation. Portions of the forest may be in various stages of development (including temporary openings or groups of very young trees) providing a source of future old growth structure on the landscape. Even-aged structure may be present on up to 10% of the landscape to provide structural diversity.

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3 Frequent, low-severity fires (Fire Regime I) occur across the entire landscape, including throughout goshawk home ranges, with a return interval of 14 to 24 years. Fires burn primarily on the forest floor and typically do not spread between tree groups as crown fire.

4 Old growth structure occurs throughout the landscape, generally in small areas as individual old growth components or as clumps of old growth. Old growth may be inter-mixed with groups of younger trees or distinct groups of mostly old trees.

5 Vigorous trees dominate, but older declining, top-killed, lightning-scarred, and fire-scarred trees are a component that provide for snags and coarse woody debris and are well distributed throughout the landscape. Snags are typically 18 inches or larger diameter at breast height (DBH) and average 3 per acre. Downed logs (>12 inch diameter at mid-point, >8 feet long) average 3 per acre in forested areas. Coarse woody debris, including downed logs, ranges from 5 to 15 tons per acre.

6 Dwarf mistletoe infestations may be present on ponderosa pine and Douglas-fir, but rarely in other tree species. It occurs in less than 15% of host trees in uneven-aged forest structures and less than 25% in even-aged forest structures. Infestation size, severity, and amount of mortality varies among infected trees. Witches' brooms may be scattered throughout the infestations providing structural diversity in the stand and improved foraging and/or nesting habitat for wildlife species, such as small mammals (e.g., tree squirrels) and raptors (e.g., goshawks).

7 The majority of soil cover is composed of native grasses and forbs, as opposed to needles and leaves, but all contribute to the fine fuels that maintain a natural fire regime.

Mid-Scale (10-1,000 acres)

8 At the mid-scale, appearance is variable, but generally uneven-aged and open. Occasionally small patches (generally less than 50 acres) of even-aged forest structure are present. Disturbances sustain the overall variation in age and structural distribution.

9 Tree density ranges from 30 to 125 square feet of basal area per acre, with the majority coming from larger trees.

10 Trees are arranged in small clumps and groups interspersed within variably-sized openings of grass/forb/shrub vegetation associations similar to historic patterns. Size, shape, number of trees per group, and number of groups per area are variable across the landscape depending on elevation, soil type, aspect, and site productivity. More biologically productive forested sites contain more trees per group and more groups per area.

11 Basal area is 10 to 20% higher in some areas than in the general forest. Examples include goshawk post-family fledgling areas (PFAs), north-facing slopes, and canyon bottoms. Goshawk nest areas have forest conditions that are multi-aged but are dominated by large trees with relatively denser canopies than other areas in the dry mixed conifer type.

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12 Groups of aspen are present in MCD where they naturally occur.

13 Where the potential exists, Gambel oak thickets with various diameter stems and low growing, shrubby oak are present. These thickets provide forage, cover, and nesting habitat for species (e.g., small mammals, birds, deer, and elk). Gambel oak mast (acorns) provides food for wildlife species, such as black bear. The distribution and abundance of oak balances wildfire hazard fuels reduction and tree regeneration with wildlife habitat, grazing conditions, age class diversity, and soil condition.

14 The wildland urban interface (WUI) is comprised of smaller and more widely spaced groups of trees and lower numbers of snags and coarse woody debris than surrounding general forest. Crown base heights may be higher than in non-WUI areas. Within WUI, fires burn primarily on the forest floor and rarely spread as crown fire.

Fine Scale (10 acres or less)

15 Tree groups are typically less than 1 acre and consist of 2 to 50 trees per group, but are sometimes larger, such as on north facing slopes. Regeneration openings occur as a mosaic and are similar in size to nearby groups.

16 Interspaces between groups are variably shaped, are comprised of a native grass-forb-shrub mix, and may contain individual trees or snags. Interspaces typically range from 10% of an area in more productive sites to 50% in less productive sites.

17 Trees typically occur in irregularly shaped groups and are variably spaced with some tight clumps. Trees within groups are of similar or variable ages, often containing more than one species. Crowns of trees within mid-aged and old groups are interlocking or nearly interlocking.

18 Density is variable, with canopy cover ranging from very open to closed.

19 Groundcover consists primarily of perennial grasses and forbs capable of carrying surface fire. Fires generally burn as surface fires, but single-tree torching and isolated group torching is not uncommon.

20 Mesic soils are well distributed and fully functioning, within the capacity of the vegetation community for at-risk species.

MCD Objectives (FW-VEG-MCD-O)

1 Mechanically treat at least 5,500 – 10,000 acres, during each 10-year period following plan approval.

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2	During each 10 year period following plan approval, treat at least 20,000 – 40,000 acres using a combination of prescribed fire and naturally ignited wildfire to make progress toward or to maintain desired conditions.

MCD Guidelines (FW-VEG-MCD-G)

1	Slash piles should be retained across the landscape for several years, to increase small mammal occupancy in areas where coarse woody debris is deficient and provide nesting habitat and cover for wildlife associated species (e.g., turkeys, birds, small mammals, reptiles, and invertebrates).
2	If slash is scattered, it should be at a height that still allows big game movement.
3	A minimum of 6 nest areas (known and replacement) should be located per goshawk territory, to maintain the persistence or contribute to the recovery of at-risk species. Goshawk nest and replacement nest areas should generally be located in drainages, at the base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.
4	Goshawk post-fledging family areas (PFAs) of approximately 420 acres in size should be designated surrounding the nest sites, to maintain the persistence or contribute to the recovery of at-risk species.
5	In goshawk foraging areas and PFAs groups of 3 to 5 reserve trees should be retained within management created openings greater than 1 acre, to maintain the persistence or contribute to the recovery of at-risk species.
6	Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30, to maintain the persistence or contribute to the recovery of at-risk species.

At-risk Species for MCD

- Mexican spotted owl
- American peregrine falcon
- Northern goshawk
- Pale Townsend's big-eared bat
- Robust larkspur

Related Plan Content for MCD

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combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Ponderosa Pine Forest (VEG-PPF)

Ponderosa Pine Forest (PPF) is the most common vegetation community on the Carson NF, covering nearly 313,000 acres and occurring on every ranger district. It spans moisture gradients from 6,000 to 7,500 feet. PPF is the dominant species, but other trees, such as Gambel oak, piñon pine, and juniper, may be present. There is typically a productive grass-forb-shrub understory. Gambel oak and kinnikinnick are common. In other savannah areas, grasses and forbs dominate the understory and extensive interspaces are between widely spaced individuals or clumps of trees. Common grass species are blue gramma, mountain muhly, muttongrass, and Arizona fescue. The ponderosa pine has evolved mechanisms to tolerate frequent, low intensity surface fires and adapts to drought during the growing season. The fire regime in PPF is highly departed from reference condition and has resulted in dense, homogeneous stands with a shift toward more shade tolerant tree species that are not adapted to fire. PPF on the Carson NF is an important source of commercial timber, and fuelwood (provisioning ecosystem services).

Past heavy logging, unmanaged grazing, and fire suppression have created a departed condition in most of the PPF on the Carson NF. The result is a lack of open canopy, few large tree dominated stands, and less snags. Beginning around the turn of the 19th century and continuing into the 1950s, high-grade logging on the Carson NF removed most of the merchantable timber from accessible PPF. What remains are even-aged, relatively young dense stands of small diameter ponderosa pine trees. Dense PPF supports less grass in the understory now than it did in the past, providing less forage for wildlife and livestock. In addition, a legacy of unmanaged livestock grazing in the early 1900s and fire suppression have significantly reduced the ability of fire to play a natural role in PPF and has allowed fire sensitive species, such as white fir, to establish. The current PPF condition is extremely susceptible to large, uncharacteristic wildfire and disturbance agents (especially dwarf mistletoe) that will be exacerbated under a warming and drying climate. In many cases mechanical treatment is required prior to reintroducing fire. Treatments that create canopy openings can induce an oak response that suppresses tree regeneration and can increase fire hazard.

Beginning in the 1940s through the 1980s, over 50,000 acres of ponderosa pine, piñon pine and juniper trees and sagebrush were converted to grasslands. These conversions were accomplished by plowing, chaining, dozer piling, tree crushing, and hand clearing with chainsaws, then seeding to grass (mostly crested wheat). The primary purpose of these conversion areas was to increase available forage for wild and livestock grazing. Some lands that have the potential to support PPF are still being managed instead for forage production. Those areas are identified as Grassland Maintenance Management Area (GMMA), and are managed toward the desired conditions defined for that management area.

PPF Desired Conditions (FW-VEG-PPF-DC)

1	Desired seral stage proportions for PPF at mid-scale:

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Class	Description	Mid-scale Proportion (%)
Non-Tree	Recently burned; grass, forb, and shrub types;	0
Early	Seedling/sapling and small trees, closed canopy	1
Mid	Single-storied with open canopy, largest trees are medium to large	3
Late	Multi-storied with open canopy, largest trees are medium to large	96
Single Story	Small to large trees, single storied, closed canopy; *contemporary landscapes only*	0

Landscape Scale (1,000 acres or greater)

2 PPF is a composed of trees of varying ages in a mosaic of seral stages and structures. Its arrangement on the landscape is similar to historic patterns, with groups and patches of variably-sized and aged trees. Forest appearance is generally uneven-aged and open; occasional areas of even-aged structure may be present. Denser stand conditions exist in some locations, such as north facing slopes and canyon bottoms.

3 The majority of soil cover is composed of native grasses and forbs, as opposed to needles and leaves, but all contribute to the fine fuels that maintain a natural fire regime.

4 Frequent, low-severity fires (Fire Regime I) occur across the entire landscape including throughout the range of northern goshawks, with a return interval of 4 to 18 years. Fires burn primarily on the forest floor and typically do not spread between tree groups as crown fire.

5 Old growth structure (large, old ponderosa pine trees with reddish-yellow, wide platy bark, flattened tops, moderate to full crowns, and large drooping or gnarled limbs) occurs throughout the landscape, generally in small areas as individual old growth components or as clumps of old growth. Old growth is generally inter-mixed with groups of uneven-aged trees but may occasionally occur in larger even-aged patches.

6 Vigorous trees dominate, but older declining, top-killed, lightning-scarred, and fire-scarred trees are a component that provide for snags and coarse woody debris that are irregularly distributed across the landscape and may not exist in some patches.

7 Snags are typically 18 inches or larger at DBH and average 1 to 2 per acre. Downed logs (>12 inch diameter at mid-point, >8 feet long) average 3 per acre. Coarse woody debris, including downed logs, ranges from 3 to 10 tons per acre.

8 Isolated dwarf mistletoe infestations may be present. I t occurs in less than 15% of host trees in uneven-aged forest structures and less than 25% in even-aged forest structures. Infestation size, severity, and amount of mortality varies among infected trees. Witches' brooms may be scattered throughout the infestations providing structural diversity in the stand and improved foraging and nesting habitat for wildlife species, such as small mammals (e.g., tree squirrels), raptors (e.g., goshawks, owls), and invertebrate species.

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Mid-Scale (10-1,000 acres)

9 At the mid-scale forest appearance is variable but generally uneven-aged and open. Generally all age classes are represented and evenly distributed, ranging from young to old. Seedlings and saplings are maintained at sufficient levels to provide a reliable source of replacement. Infrequently, small patches (generally less than 50 acres) of even-aged forest structure may be present. Disturbances sustain the overall variation in age and structural distribution.

10 Tree species composition is relatively homogeneous. Trees may be isolated individuals or arranged in small clumps and groups interspersed within variably-sized openings of grass/forb/shrub vegetation associations similar to historic patterns. Size, shape, number of trees per group, and number of groups per area are variable across the landscape depending on elevation, soil type, aspect, and site productivity. More biologically productive forested sites contain more trees per group and more groups per area.

11 Where the potential exists, Gambel oak thickets with various diameter stems and low growing, shrubby oak are present. These thickets provide forage, cover, and nesting habitat for species (e.g., small mammals, birds, deer, and elk). Gambel oak mast (acorns) provides food for wildlife species, such as black bear. The distribution and abundance of oak balances wildfire hazard fuels reduction and tree regeneration with wildlife habitat, grazing conditions, age class diversity, and soil condition.

12 Interspaces typically range from 52% in more productive sites to 90% in less productive sites. In areas with high fine-scale aggregation of trees into groups, mid-scale openness ranges from 78-90%. Tree density within forested areas generally ranges from 22 to 89 square-foot basal area per acre.

13 In some areas, basal area is 10-20% higher in mid-aged to old tree groups compared to the rest of the forest (i.e., goshawk post-fledging family areas). Goshawk nest areas have forest conditions that are multi-aged, but dominated by large trees with interlocking crowns and a canopy that is denser relative to other ponderosa pine areas.

14 In the wildland urban interface (WUI), the density of snags, downed logs, coarse woody debris, live trees, and Gambel oak may be at the low range of desired conditions, in order to reduce fire intensity and assist the control of fire. Groups of trees may be smaller, more widely spaced, or may have fewer trees per group (but still within desired condition) compared to non-WUI areas. Crown base heights may be higher than in non-WUI areas to reduce the potential for fire spreading to the tree canopy.

Fine Scale (10 acres or less)

15 Trees typically occur in irregularly shaped small groups of less than one acre, though they may be larger, such as on north-facing slopes. Some groups form tight clumps, or trees may occur as isolated individuals depending on soils, plant associations, climate, and disturbance.

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16 Groups range in size from 2 to approximately 40 trees and may contain species other than ponderosa pine. Trees within groups may be of similar or variable ages. Crowns of trees are interlocking or nearly interlocking in groups that are mid-aged to old.

17 The interspaces between groups are variably shaped, are comprised of a native grass/forb/shrub mix, and may contain individual trees or snags. Regeneration openings occur as a mosaic and are similar in size to nearby groups.

18 Groundcover consists primarily of perennial grasses, forbs, shrubs, and needle cast capable of carrying surface fire. Generally, fires burn as surface fires, but single-tree torching and isolated group torching are not uncommon and contribute to a mosaic across the landscape.

19 Rocky features, outcrops of gypseous or limy sandstones, volcanic substrate soils, and Mancos Shale soils are present and provide habitat within the capacity of the vegetation community for at-risk species.

PPF Objectives (FW-VEG-PPF-O)

1 Mechanically treat at least 22,000 – 50,000 acres, during each 10-year period following plan approval.

2 During the 10 years following plan approval, treat at least 80,000 – 125,000 acres using a combination of prescribed fire and naturally ignited wildfire to make progress toward or maintain desired conditions.

PPF Guidelines (FW-VEG-PPF-G)

1 Vegetation treatments should be designed such that structural stages and age classes are proportionally represented to assure continuous recruitment of old growth characteristics across the landscape over time.

2 To provide necessary habitat components, the largest and tallest snags (representative of the stand) and downed logs should be retained along edges of openings and within groups/clumps of trees, to provide habitat and roost sites for wildlife species (e.g., small mammals, cavity-nesting birds, and tree-dwelling bats).

3 Slash piles should be retained across the landscape for several years, to increase small mammal occupancy in areas where coarse woody debris is deficient and provide nesting habitat and cover for turkeys, birds, small mammals, reptiles, and invertebrates.

4 If slash is scattered, it should be at a height that still allows big game movement.

5 A minimum of 6 nest areas (known and replacement) should be located per goshawk territory, to maintain the persistence or contribute to the recovery of at-risk species. Goshawk nest and replacement nest areas should generally be located in drainages, at the

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base of slopes, and on northerly (NW to NE) aspects. Nest areas should generally be 25 to 30 acres in size.

6 Goshawk post-fledging family areas (PFAs) of approximately 420 acres surrounding nest sites should be designated, to maintain the persistence or contribute to the recovery of at-risk species.

7 In goshawk foraging areas and PFAs groups of 3 to 5 reserve trees should be retained within management created openings greater than 1 acre, to maintain the persistence or contribute to the recovery of at-risk species.

8 Human presence should be minimized in occupied goshawk nest areas during nesting season of March 1 through September 30, to maintain the persistence or contribute to the recovery of at-risk species.

At-risk Species for PPF

- American peregrine falcon
- Northern goshawk
- Pale Townsend's big-eared bat
- Spotted bat
- Chaco milkvetch (Canjilon RD)
- Pagosa milkvetch (Jicarilla RD)
- Ripley's milkvetch (Tres Piedras, Questa, and Camino Real RDs)
- Small-headed goldenweed (Tres Piedras and El Rito RDs)

Related Plan Content for PPF

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Piñon-Juniper Woodland (VEG-PJO)

The Piñon-Juniper Woodland (PJO) vegetation community covers 178,000 acres and occurs on every ranger district of the Carson NF. It occupies drier sites from 6,200 to above 7,500 feet, where it begins to be outcompeted by ponderosa pine and Douglas-fir. The moderate- to high-density overstory is dominated by two-needle piñon pine, Rocky Mountain juniper, and one-seed juniper. Soils are generally shallow, coarse, and often rocky, and support sparse shrubs and grasses, mainly blue and sideoats gramas. Typical disturbances (e.g., fire, insects, and disease) are high severity and occur infrequently, creating and maintaining even-aged patches. Woodland development occurs in distinctive phases, ranging from open grass-forbs, to mid-aged open canopy, to mature closed canopy forest.

American Indians have occupied PJO in Northern New Mexico for centuries and have utilized plants from these areas for many purposes, including food and building materials (cultural and provisioning ecosystem services). Piñon pine and juniper are highly valued by local forest dependent communities for fuelwood and pine nuts, and openings provide forage for livestock and wildlife (provisioning ecosystem services). Between 2002 and 2005, bark beetles killed approximately 284,500 acres significant portion of PJO, PJS, and other vegetation communities on the Carson NF. Soil function has been degraded due to a lack of effective groundcover, less overall organic matter, and changes in species composition, resulting in altered soil stability and reduced nutrient cycling. The pinyon jay is dependent on piñon pine trees and nuts, and PJO provides important habitat for game species, including elk, deer, and bear.

Beginning in the 1940s through the 1980s, over 50,000 acres of ponderosa pine, piñon pine, and juniper trees and sagebrush were converted to grasslands. These conversions were accomplished by plowing, chaining, dozer piling, tree crushing, and hand clearing with chainsaws, then seeding to grass (mostly crested wheat). The primary purpose of these conversion areas was to increase available forage for wild and livestock grazing. Some lands that have the potential to support PJO are still being managed instead for forage production. Those areas are identified as Grassland Maintenance Management Area (GMMA), and are managed toward the desired conditions defined for that management area.

PJO Desired Conditions (FW-VEG-PJO-DC)

1	Desired seral stage proportions for PJO at mid-scale:

Class	Description	Mid-scale Proportion (%)
Non-Tree	Non-tree: Recently burned; grass, forb, & shrub types	10
Early-Open	Seedling/sapling and open canopy small trees	5
Early-Closed	Small trees, closed canopy	15
Late-Open	Medium to large trees, open canopy	10
Late-Closed	Medium to large trees, closed canopy	60

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Landscape Scale (1,000 acres or greater)

2 PJO is characterized by even-aged patches of piñon pines and junipers that, at the landscape scale, form multi-aged woodlands. In treed seral states, piñon pine trees are occasionally absent, but one or more juniper species is always present.

3 Tree density is high, and where interlocking crowns shade the ground over extensive areas shrubs are sparse to moderate and herbaceous cover is low and discontinuous. However, plant litter (e.g., leaves, needles) and coarse woody debris are present in sufficient quantity to resist accelerated soil erosion and promote nutrient cycling, water retention, and the microclimatic conditions necessary for piñon pine seed germination (improved nutrient and soil properties, higher soil moisture, lower temperatures, and reduced solar insolation).

4 Biological soil crusts are present and improve nutrient cycling and stabilize soils, especially on sandier soils.

5 Based on site capability, native grass and forb cover is maximized to protect and enrich soils, as well as provide forage for ungulate grazing.

6 Widespread fire occurs infrequently, on the order of centuries, and its effects are variable due to variation in groundcover. The fires that do occur are mixed to high severity (Fire Regimes III, IV, & V).

7 Old growth structure occurs throughout the landscape, often concentrated in mid- and fine-scale units as patches of old growth. Very old trees (>300 years old) are present.

8 Older, declining, infested, or diseased trees are a component that provide a source of snags and coarse woody debris and are well-distributed throughout the landscape. There are an average of 2 snags per acre, and coarse woody debris averages 2 to 5 tons per acre.

Mid-Scale (10-1,000 acres)

9 The distribution of patches varies depending on disturbance, elevation, soil type, aspect, and site productivity. Patches are primarily even-aged and vary in size but are mostly in the 10s to 100s of acres.

10 Tree densities vary among seral stages, but average 177 trees per acre

11 Where the potential exists, Gambel oak thickets with various diameter stems and low growing, shrubby oak are present. These thickets provide forage, cover, and habitat for species that depend on them (e.g., small mammals, nesting or feeding birds, deer, and elk). Gambel oak mast (acorns) provides food for wildlife species, such as black bear and small mammals. The distribution and abundance of oak balances wildfire hazard fuels reduction and tree regeneration with wildlife habitat, grazing conditions, age class diversity, and soil condition.

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12 In the wildland urban interface (WUI) the density of snags, coarse woody debris, live trees and Gambel oak may be lower than in the rest of the ERU in order to reduce fire intensity and assist in the control of fire. Trees may be younger and more widely spaced and disturbances (e.g., prescribed fire, vegetation treatments) may occur more frequently than in non-WUI areas. Crown base heights may be higher than in non-WUI areas to reduce the potential for fire spreading to the tree canopy.

Fine Scale (10 acres or less)

13 Small fires may occur more frequently at the fine scale, burning single trees or small patches (Fire Regime III, return interval 35-200 years).

14 Rocky features, outcrops of gypseous or limy sandstones, volcanic substrate soils, and Mancos Shale soils are present and provide habitat within the capacity of the vegetation community for at-risk species.

PJO Standards (FW-VEG-PJO-S)

1 On non-grassland soils in PJO, seral grasslands created by previous vegetation treatments shall be managed toward restoration of PJO desired conditions, unless they are in a Grassland Maintenance Management Area (GMMA).

PJO Guidelines (FW-VEG-PJO-G)

1 Treatments in PJO should leave key habitat features (i.e., roosting trees, snags, partially dead or dying trees, or downed logs) and single or small groups of medium to large native trees that are widely spaced, with expanses of herbaceous vegetation and coarse woody debris, to provide for soil productivity, traditional uses (e.g., piñon nut gathering), and wildlife needs, such as foraging habitat for at-risk species, migratory birds, and other piñon-juniper obligate species.

2 In areas that produce pinon seeds, the harvesting of pinon producing trees for fuelwood or other forest products should be restricted (e.g., allow dead and down, not green; diameter restrictions) to reduce impacts to at-risk species.

3 Treatments in PJO should avoid creating a sharp, well-defined edge between dense woodlands and recovered shrublands, to provide foraging habitat of at-risk species.

4 Grassland soil inclusions (Mollisols) should be managed towards MSG desired conditions, to protect soil function and provide forage.

5 Slash piles should be retained across the landscape for several years, to increase small mammal occupancy in areas where coarse woody debris is deficient and provide nesting habitat and cover for turkeys, birds, small mammals, reptiles, and invertebrates.

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6	If slash is scattered, it should be at a height that still allows big game movement.

At-risk Species for PJO

- American peregrine falcon
- Pinyon jay
- Pale Townsend's big-eared bat
- Spotted bat
- Chaco milkvetch
- Chama blazing star
- Pagosa milkvetch
- Ripley's milkvetch
- Tufted sand verbena (Canjilon RD)

Related Plan Content for PJO

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Piñon-Juniper Sagebrush (VEG-PJS)

Piñon-Juniper Sagebrush (PJS) is a transitional vegetation community, spanning conditions between wetter, higher elevation (PJO) and the lower elevation Sagebrush Shrubland (SAGE). PJS occurs on over 217,000 acres of the Carson NF, between 5,900 and 7,500 feet. It is found on every ranger district. The two-needle piñon pine and Rocky Mountain juniper overstory is open, with trees occurring as individuals or in small, often even-aged clumps. Some Utah juniper is found in the southern Tres Piedras and El Rito ranger districts. Cover in the understory is between 6 and 25% big sagebrush, with a limited herbaceous layer concentrated in canopy openings. Blue grama and sideoats grama are common grass species.

Piñon pine and juniper are highly valued by local forest dependent communities for fuelwood, building materials, and pine nuts (cultural and provisioning ecosystem services). Openings provide forage for livestock and wildlife (cultural and provisioning ecosystem services). Recent bark beetle induced piñon pine mortality was greatest at lower elevations and on drier sites, the same areas that favor PJS over PJO. Soil function has been degraded due to a lack of effective groundcover, less overall organic matter, and changes in species composition, resulting in altered soil stability and reduced nutrient cycling. The pinyon jay is dependent on piñon pine trees and nuts, and PJS provides important habitat for game species including elk, deer, and bear.

Beginning in the 1940s through the 1980s, over 50,000 acres of ponderosa pine, piñon pine, and juniper trees and sagebrush were converted to grasslands. These conversions were accomplished by plowing, chaining, dozer piling, tree crushing, and hand clearing with chainsaws, then seeding to grass (mostly crested wheat). The primary purpose of these conversion areas was to increase available forage for wild and livestock grazing. Some lands that have the potential to support PJS are still being managed instead for forage production. Those areas are identified as Grassland Maintenance Management Area (GMMA), and are managed toward the desired conditions defined for that management area.

PJS Desired Conditions (FW-VEG-PJS-DC)

1	Desired seral stage proportions for PJS at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Non-tree: Recently burned, grass, forb, & shrub types	10
Mid-Open	Seedling/sapling and open canopy small trees	25
Mid-Closed	Medium to large trees, open canopy	35
Late-Open	Small trees, closed canopy	20
Late-Closed	Medium to large trees, closed canopy	10

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Landscape Scale (1,000 acres or greater)

2 PJS is a mix of trees and shrubs that occurs as a series of vegetation states that move from herbaceous-dominated to shrub-dominated to tree-dominated over time. Trees occur as individuals or in smaller groups ranging from young to old across the landscape. Typically groups are even-aged. Piñon pine trees are occasionally absent but one or more juniper species is always present.

3 The understory is dominated by moderate to high density shrubs depending on successional stage. The shrub component consists of sagebrush or a mix of sagebrush and other shrub species, which are well-distributed. Shrub canopy is typically closed during the later successional stages. Litter and rock comprise the greatest proportion of groundcover. Native grasses and forbs are sparse due to shrub dominance.

4 Biological soil crusts are present and improve nutrient cycling and stabilize soils, especially on sandier soils.

5 Native grass and forb cover are adequate, based on site capability, to protect and enrich soils, as well as provide for ungulate grazing.

6 Fires are typically infrequent (fire return intervals of 80-100+ years) and mixed severity (Fire Regime III). Stand replacing fire may occur at longer intervals.

7 Old growth structure occurs throughout the landscape, generally in small areas as individual old growth components or as clumps of old growth. Snags and old trees with dead limbs/tops are scattered across the landscape. Large dead wood is present.

8 Older, declining, infested, or diseased trees are a component that provide a source of snags and coarse woody debris and are well-distributed throughout the landscape. There are an average of 6 snags per acre, and coarse woody debris averages 4 tons per acre.

Mid-Scale (10-1,000 acres)

9 The distribution of patches varies depending on disturbance, elevation, soil type, aspect, and site productivity. Patches are primarily even-aged and vary in size but are mostly 50 to 200 acres.

10 The understory is dominated by moderate to high density shrubs with a closed shrub canopy in later successional stages.

11 Where historically occurring, Gambel oak thickets with various diameter stems and low growing, shrubby oak are present. These thickets provide forage, cover, and habitat for species that depend on them, such as small mammals, feeding or nesting birds, deer, and elk. Gambel oak mast (acorns) provides food for wildlife species (e.g., black bear and small mammals). The distribution and abundance of oak balances wildfire hazard fuels reduction and tree regeneration with wildlife habitat, grazing conditions, age class diversity, and soil condition.

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12 In the wildland urban interface (WUI) the density of snags, coarse woody debris, live trees, and Gambel oak may be lower than in the rest of the ERU in order to reduce fire intensity and assist in the control of fire. Trees may be younger and more widely spaced, and disturbances (e.g., prescribed fire, vegetation treatments) may occur more frequently than in non-WUI areas. Crown base heights may be higher than in non-WUI areas to reduce the potential for fire spreading to the tree canopy.

Fine Scale (10 acres or less)

13 Trees occur as individuals or in smaller groups ranging from young to old. Typically groups are even-aged.

14 Piñon pine trees are occasionally absent, but one or more juniper species is always present.

15 Small fires may occur more frequently at the fine-scale, burning single trees or small patches, but usually not spreading through shrubs, perennial grasses, and forb groundcover (Fire Regime III, return interval 35-200 years).

16 Rocky features, outcrops of gypseous or limy sandstones, volcanic substrate soils, and Mancos Shale soils are present and provide habitat within the capacity of the vegetation community for at-risk species.

PJS Standards (FW-VEG-PJS-S)

1 On non-grassland soils in PJS, seral grasslands created by previous vegetation treatments shall be managed toward restoration of PJS desired conditions unless they are in a Grassland Maintenance Management Area (GMMA).

PJS Guidelines (FW-VEG-PJS-G)

1 Vegetation community inclusions with Mollisol soils should be managed toward MSG desired conditions, to protect soil function and provide forage.

2 On non-grassland soils in PJS, seral grasslands created by previous vegetation treatments should be managed toward restoration of PJS desired conditions unless they are in a Grassland Maintenance Management Area (GMMA).

3 Slash piles should be retained across the landscape for several years, to increase small mammal occupancy in areas where coarse woody debris is deficient and provide nesting habitat and cover for turkeys, birds, small mammals, reptiles, and invertebrates.

4 If slash is scattered, it should be at a height that still allows big game movement.

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5	Treatments in PJS should avoid creating a sharp, well-defined edge between dense woodlands and recovered shrublands, to provide foraging habitat of at-risk species.
6	In areas that produce pinon seeds, the harvesting of pinon producing trees for fuelwood or other forest products should be restricted (e.g., allow dead and down, not green; diameter restrictions) to reduce impacts to at-risk species.

At-risk Species for PJS

- American peregrine falcon
- Pinyon jay
- Spotted bat
- Chama blazing star (Canjilon and El Rito RDs)
- Ripley's milkvetch (Tres Piedras, Questa, and Camino Real RDs)
- Tufted sand verbena (Canjilon RD)

Related Plan Content for PJS

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Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS)

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Sagebrush (VEG-SAGE)

The Sagebrush community only occurs in significant amounts on the Jicarilla Ranger District and the southern portion of the Tres Piedras Ranger District. It covers 59,144 acres on the Carson NF, but is common on the lower elevation land adjacent to the forest. Many communities that were historically grasslands have been invaded by sagebrush shrubs, both on and outside the Carson NF. Sagebrush in Northern New Mexico is at the southern edge of its range, and temperature and available moisture limit the amount of grass cover in the understory. Big sagebrush is the dominant species in the vegetation community, with less than 10% tree cover and few other shrub species present. Grama grass species occur sparsely. Historically, fires burned as frequently as every 35 years and maintained both treeless shrub states and large grass dominated interspaces.

Although sagebrush is a common species on the landscape surrounding the Carson NF, its range has shifted as trees encroach on shrublands and shrubs encroach on grasslands. SAGE is defined by climate and soils that historically favored sagebrush over either trees or grasslands. SAGE on the Carson NF, particularly on the Tres Piedras Ranger District, has uniquely low departure in the context landscape. The Carson NF plays a significant role in the sustainability of SAGE in the broader landscape and may provide an important refuge for dependent organisms. A majority of soils in SAGE are in unsatisfactory condition, altering soil stability and reducing nutrient cycling. A lack of effective vegetation groundcover contributes to this soil condition, and also provides less forage for livestock and lower quality habitat for wildlife. SAGE is important for the western burrowing owl, the black-footed ferret, and Gunnison's prairie dog. The sagebrush is collected for medicinal and ceremonial purposes (cultural ecosystem service).

SAGE Desired Conditions (FW-VEG-SAGE-DC)

1 Desired seral stage proportions for SAGE at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Recently burned, all herb types	15
Late-Closed	Shrub, closed canopy	30
Late-Open	Shrub, open canopy	55
Tree	All tree types; *contemporary landscapes only*	0

2 The composition, structure, and function of biotic and abiotic components of the SAGE vegetation community are within or moving toward reference conditions. The majority of sagebrush is in mid-seral or mature states.

3 Shrub cover and the distribution of large contiguous shrub patches meet the needs of a variety of sagebrush obligate wildlife species, as described in these desired conditions.

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4 A vigorous, though not necessarily dense, understory community of native grasses and forbs is present.

5 Biological soil crusts are present and improve nutrient cycling and stabilize soils, especially on sandier soils.

6 Single trees or groups of trees cover less than 10% of any SAGE terrestrial ecosystem unit (TEU) polygon and less than 5% of the vegetation community as a whole.

7 Shrub cover is 20 to 50% of any SAGE TEU polygon.

8 Stand replacing fires burn every 35-200 years (Fire Regime III).

9 Soil condition, as defined by basic soil functions (e.g., stability, soil hydrology, and nutrient cycling), has the capacity to support the diversity of associated species and at-risk species.

At-risk Species for SAGE

- Black-footed ferret
- American peregrine falcon
- Western burrowing owl
- Gunnison's prairie dog
- Spotted bat
- Ripley's milkvetch (Tres Piedras, Questa, and Camino Real RDs)
- Tufted sand verbena (Canjilon RD)

Management Approaches for SAGE

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1. Consider vegetation management activities in SAGE (e.g., chemical application, mowing, disking, and burning), to enhance shrubland diversity, distribution, and productivity to support wildlife.

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Related Plan Content for SAGE

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Soil Resources (SL)

Soil is the crucial area of unconsolidated mineral and organic material where organic matter accumulates and decomposes. It is the zone of maximum biological activity and nutrient release and is the basis of the terrestrial ecosystem. Soil performs four important functions - as a medium for plant growth; as a means of water storage, supply, and purification; in modification of the earth's atmosphere through carbon storage and other means; and as habitat for organisms that decompose organic matter (supporting and regulating ecosystem services).

The physical and chemical characteristics of soils are vulnerable to forest management activities and other disturbance. Physical characteristics are surface structure, bulk density, infiltration, erosion, and surface horizon. Impacts to these characteristics may be compaction, erosion, rutting, and loss of the surface horizon. Chemical characteristics include nutrient cycling and soil composition. Impacts to the chemical aspect of soil may result from changes in vegetation community composition, litter loss, lack of coarse woody material, and atmospheric deposition.

Soils are variable on the Carson NF and range from hot, dry desert soils at the lowest elevations to cold, moist soils found in ALP at the highest elevations. Soils are inventoried and classified into terrestrial ecological units (TEUs) by the "Terrestrial Ecosystem Survey of the Carson NF" (TES) (USDA FS Carson NF 1987).

Soil condition rating is based on the ability of soils to sustain biological health and productivity, maintain environmental quality, cycle nutrients, and infiltrate water. From 40 to over 70% of MSG and lower elevation vegetation communities of the Carson NF have soil conditions that are unsatisfactory. Soil conditions in the upper elevation SFF, BP, and mixed conifer vegetation communities are mostly satisfactory. In addition, naturally unstable geology (e.g., Datil formation, slow geologic landslides) contributes to sediment loads in downstream rivers.

Soil Desired Conditions (FW-SL-DC)

1 Soil productivity, function, and inherent physical, chemical, and biological processes remain intact or are enhanced. Soils can readily absorb, store, and transmit water vertically and horizontally; accept, hold, and release nutrients; and resist erosion.

2 Logs and other woody material are distributed across the soil surface to maintain soil productivity and key habitat features.

3 Vegetation, woody debris, and litter are distributed across the soil surface in adequate amounts to limit accelerated erosion and contribute to soil deposition and development.

4 Relatively undisturbed biological soil crusts (i.e., soil consisting of cyanbacteria, lichens, mosses, and algae organisms) are present or reestablished where the potential exists.

5 Soil productivity is not inhibited by nonnative invasive plant species.

6 Soils are free from anthropogenic contaminants that could alter ecosystem integrity or affect public health.

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7	Volcanic substrate soils and Mancos Shale soils are present and provide habitat within the capacity of the vegetation community for at-risk species.

Soil Guidelines (FW-SL-G)

1	Ground-disturbing management activities should be designed to minimize short- and long-term impacts to soil resources (e.g., soil compaction and soil loss). Where disturbance cannot be avoided, project specific soil and water conservation practices should be developed.
2	Soil compaction from all management activities should not affect ecological and hydrological functions.
3	Masticated material should not exceed an average depth of 4 inches, to mitigate burn severity and protect soil function.

Related Plan Content for Soil Resources

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Watersheds and Water (WSW)

Watersheds produce water that flows and collects as surface water or infiltrates into groundwater. Water from the forest supports many uses throughout New Mexico, and further downstream (provisioning ecosystem services). Streams, springs, lakes, and other natural waters are centers of high biological diversity in arid landscapes, and their ecological health is important for forest ecosystem sustainability. Wildlife is more concentrated around open water sources than in the general landscape, and obligate aquatic and semiaquatic species on the Carson NF are dependent on these limited and scattered resources. Collectively, surface waters contribute to connectivity for wildlife across the landscape; local and urban potable water supplies; agricultural uses (e.g., livestock watering and irrigation); and recreation (provisioning and cultural ecosystem services). Water in arid Northern New Mexico also has important traditional cultural significance (cultural ecosystem services) and will only become more vital in the future with additional pressures from predicted climate change and continually increasing demands from growing urban populations.

The Carson NF is an important source of groundwater recharge (regulating ecosystem service). It sits above three state declared groundwater basins – the Canadian, Rio Grande, and San Juan. All groundwater in Northern New Mexico originates as infiltrating precipitation. Surface water from each basin supplies both shallow and deep geologic aquifers. Two deep aquifer systems area connected with the Carson NF, the Rio Grande aquifer and the Colorado Plateau aquifer. Groundwater is used on NFS and surrounding lands for many purposes, including drinking, waste disposal, domestic use, livestock and wildlife watering, and to supply Forest Service facilities.

Lands within the Carson NF form the headwaters of numerous rivers and streams that flow into the Rio Grande, Rio Chama, San Juan River, and Canadian River (provisioning ecosystem services). Because of human demand for water resources and other human land uses, watersheds, and aquatic ecosystems have been altered from their reference condition. While the location of stream channels is generally unchanged, diversion into acequias has changed the hydrologic, riparian, and agroecosystem function of stream systems. On the Carson NF, these effects primarily occur just at the edge of the forest, but on-forest diversions have extensive effects in the irrigated floodplain valleys that are immediately adjacent to the forest. Water is dispersed across a wider area and maintains additional riparian systems and agriculture. Surface flow from unlined ditches and irrigated fields seeps into groundwater and contributes to aquifer recharge and delayed return flow to streams.

Acequias provide cultural and provisioning ecosystem services. They feed water to communal agricultural lands, bring families and traditional communities together through the shared work of maintaining them, and contribute to a way of life that spans generations.

Watershed condition is integral to all aspects of resource management and use. Good watershed management maintains the productive capacity of soils; protects water quality and quantity; sustains native species; provides State designated water uses; and reduces threat of flood damage to Forest Service infrastructure and downstream values (supporting, provisioning, and regulating ecosystem services). The Carson NF intersects 131 6th level hydrologic unit code (HUC) watersheds. Approximately 20% are functioning properly, most are functioning at risk. While restoration can restore proper function of many watersheds, some of those at risk are likely to remain at risk, due to reduced extent and timing of winter precipitation, risk of stand replacing fire events in forested areas, and the effects of projected increased average temperatures.

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Some riparian areas surrounding open water are not in proper functioning condition and many streams on the Carson NF are not in full attainment of water quality standards. According to the 2016-2018 State of New Mexico Clean Water Act Section 303(d)/30b(b) Integrated Report, the most common cause of impairment is high water temperature, as a result of reduced shading and/or reduced stream flows from drought or water diversion. High turbidity nutrient/eutrophication biological indicators, and *E. coli* are also common causes of impairment of streams on the forest.

The primary risk to watersheds on the Carson NF is uncharacteristic wildland fire. Watersheds containing departed vegetation types are at higher risk of erosion, sedimentation, and nonnative species invasion following uncharacteristic wildland fire, as well as a downstream risk of sedimentation. Northern New Mexico has been affected by a drought for the past two decades, causing spring runoff to diminish overall and end earlier in the spring. Drought has multiple and interrelated effects on ecological and socioeconomic resources and the benefits they provide. The availability of clean and cold water will become more threatened in the future with additional pressures from predicted climate change and continually increasing demands.

Additional protection has been applied to some waters on the Carson NF by the State of New Mexico through designation as Outstanding National Resource Waters (ONRW). ONRW designations include the West, Middle, and East Forks of the Rio Santa Barbara, all surface waters within Valle Vidal, and all perennial streams, lakes, and wetlands within the Carson NF's six wilderness areas.

Priority Watersheds

Priority watersheds have been identified using the Forest Service National Watershed Condition Framework (WCF) as areas where plan objectives for restoration focus on maintaining or improving watershed condition. These priorities may change over the life of the forest plan and are reevaluated every five years to concentrate restoration in other areas, based on (1) broad scale restoration strategies; (2) the importance of water and watersheds; (3) the urgency and ability of management action to address threats; (4) alignment with other objectives and priorities of the Forest Service and other agencies and organizations; (5) ecological values; and (6) impaired ecosystems including those where improvement or restoration are necessary to meet regulatory requirements. The WCF map viewer website will always contain the current WCF priority watersheds and associated information.

Watershed and Water Desired Conditions (FW-WSW-DC)

1	Watersheds are functioning properly (according to the Watershed Condition Framework or similar current protocol) and they exhibit high geomorphic, hydrologic, and biotic integrity relative to their potential condition.
2	Ecological components (e.g., soil, vegetation, and fauna) are resilient or adaptive to disturbances, including human activities, climate change, and natural ecological disturbances (e.g., fire, drought, flooding, wind, grazing, insects, disease, and pathogens) and maintain or improve water quality and riparian and aquatic species habitat.

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3	Soils, riparian areas, and watersheds sustain groundwater quantity and quality, and recharge in aquifers. The water table is maintained at a level that sustains native riparian and aquatic vegetation, high productivity, and soil moisture characteristics.
4	Aquatic habitats are connected and free from alterations (e.g., temperature regime changes, lack of adequate streamflow, barriers to aquatic organism passage) to allow for species migration, connectivity of fragmented populations and genetic exchange. Barriers to movement are located where necessary to protect native fish from non-native species.
5	Aquatic and riparian habitats support self-sustaining populations of native fish and/or other aquatic/riparian species and provide the quantity and quality of aquatic and riparian habitat within reference conditions.
6	Watersheds support multiple uses (e.g., timber, recreation, grazing) with no long-term decline in ecological conditions. Short-term impacts occur only when they serve to improve conditions over the life of the plan.

Watershed and Water Objectives (FW-WSW-O)

1	Improve or maintain watershed function on at least 30,000 -50,000 acres annually. Treatments align with priority watersheds.

Watershed and Water Guidelines (FW-WSW-G)

1	For all management activities applicable best management practices (BMPs) should be identified from the National Core Technical Guide for BMPs and the Southwestern Region Soil and Water Conservation Handbook, and implemented, in order to maintain water quality, water quantity, and timing of flows, and prevent or reduce accelerated erosion.
2	New or reconstructed roads, infrastructure, and recreation sites, or similar constructed facilities should not be located within 300 feet of water resource features, except where necessary for stream crossings or to provide for resource protection to avoid the long-term adverse impacts associated with the occupancy and modification of floodplains and water resource features.
3	Meadow management should consider patterns of recharge and discharge and minimize disruptions to groundwater levels that are critical for wetland integrity.
4	New groundwater wells, particularly those in riparian management zones, should be located to minimize effects on the character and function of connected water resources.

Management Approaches for the Watersheds and Water

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illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider completing watershed restoration action plans (WRAPs) or similar process for priority watersheds.
2. Consider including quantitative analysis of pollutant sources and pollutant load reductions in WRAPS when feasible.

Related Plan Content for Watersheds and Water

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Riparian Management Zones (WSW-RMZ)

Riparian management zones include those portions of watersheds around lakes, perennial and intermittent streams, and open water wetlands that have characteristic riparian vegetation and provide riparian function. The riparian ecosystem within that zone encompasses any surface water and its associated aquatic habitat, connected shallow groundwater, aquatic and riparian vegetation, associated soils (i.e., hydric and alluvial), and contributing fluvial landforms.

Southwestern riparian ecosystems are dynamic habitats that border streams, springs, ponds, lakes or occupy other wet areas, such as wetlands, cienegas, fens and bogs. They occur within all terrestrial vegetation communities and are the interface between the terrestrial uplands and open water. They include water dependent plants near the water's edge and often transition to a combination of upland and riparian species as distance from water increases, which adds significantly to their ecosystem diversity. Riparian vegetation may vary widely depending on amount, timing, and source of water, as well as biophysical characteristics (e.g., salinity and gradients in saturated soils). Riparian areas are more productive than other vegetation communities in terms of plant and animal biomass per acre. As a result, they provide some of the most important habitat on the Carson NF and in the Southwest (supporting ecosystem service).

Healthy riparian areas slow water movement that raises the water table and saturation zone and recharges aquifers (regulating ecosystem services). Riparian zones protect streams from excessive sedimentation, erosion, and pollution, and, thus, play a role in water quality (regulating and provisioning ecosystem services). They provide shelter and food for aquatic animals and shade that is important for water temperature regulation (supporting and provisioning ecosystem services). They dissipate stream energy which can reduce flood damage (regulating ecosystem service). They provide wildlife habitat, increased biodiversity, and wildlife connectivity, enabling aquatic and riparian organisms to move along river systems and thus preventing community isolation and fragmentation (supporting ecosystem service). They are a source of large woody debris recruitment. Soils in riparian ecosystems play a key role in nutrient and water storage and distribution (regulating and supporting ecosystem services).

Natural disturbances in stream ecosystems include animals (e.g., beavers), flooding, and changing climatic conditions (e.g., extended drought). The seasonality and quantity of water in floods are key factors in the germination and establishment of riparian vegetation. Fire is an infrequent disturbance and is dependent on the fire regime in adjacent vegetation communities. Historically on the Carson NF as in most of the Southwest, riparian areas have been influenced by water withdrawal (from private water rights), roads and motor vehicle activity, recreation pressure, and animal grazing, which can all impact riparian ecosystem function. As a result of some of these activities, there is also a higher influx of invasive species found with riparian areas.

Riparian Management Zone Desired Conditions (FW-WSW-RMZ-DC)

1	Riparian ecosystems are intact and properly functioning; within their type and capability, riparian ecosystems have vegetation, landform, large coarse woody debris, litter, and root masses to capture sediment, filter contaminants, dissipate stream energy and overland flow from uplands to protect and enrich soils and stabilize banks and shorelines.

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2 Riparian vegetation, particularly native species, support a wide range of vertebrate and invertebrate animal species. There is adequate recruitment and reproduction to maintain diverse native plant species composition indicative of the soil moisture conditions for the site.

3 Native obligate wetland species dominate herbaceous bank cover.

4 Riparian vegetation (density and structure) provides site-appropriate shade to regulate water temperature in streams.

5 Riparian ecosystems exhibit connectivity between and within aquatic, riparian, and upland components that reflect their natural linkages and range of variability. Stream courses and other links provide habitat and movement that maintain and disperse populations of riparian-dependent species, including beaver. Riparian areas are connected vertically between surface and subsurface flows.

6 Compared to surrounding uplands, riparian corridors have characteristics (e.g., surface water and saturated soils) that reduce the frequency and severity of fire. Fire is limited or absent and high to mixed severity fire occurs very infrequently.

7 Natural disturbances (e.g., flooding and scouring) promote a diverse vegetation structure necessary for the recruitment of riparian-dependent species. The ecological function of riparian areas is resilient to other disturbance, including animal and human use, drought, and climate change.

8 Within the capability of individual wetland types and consistent with the hydrologic cycle, wetland vegetation provides life cycle habitat needs for native and desirable nonnative, riparian, and aquatic species and supports other wildlife.

Riparian Management Zone Objectives (FW-WSW-RMZ-O)

1 Restore structure and function of at least 200 – 300 acres of nonfunctioning and functioning-at-risk riparian areas annually. Treatments align with priority watersheds.

Riparian Management Zone Guidelines (FW-WSW-RMZ-G)

1 Riparian management zones should be defined by either a site-appropriate delineation of the riparian area or a minimum buffer of 100 feet from the edge of all perennial streams and lakes. The exact width of riparian management zones may vary based on ecological or geomorphic factors or water body type, but includes those areas which provide riparian and aquatic ecosystem functions and connectivity.

2 Within riparian management zones, management activities, permitted uses, and structural developments (e.g., livestock water gaps, pipelines, or other infrastructure) should occur at levels or scales that move towards desired conditions for water, soils, and vegetation. Management activities and facilities with a small footprint (e.g., intermittent livestock

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crossing locations, water gaps) may be necessary to manage larger scale impacts to riparian areas or to protect life and property.

3 To protect riparian function, the use of motorized equipment should be avoided in riparian management zones, except when there is a designated stream crossing or when short-term uses are required to improve resource conditions and maintain infrastructure.

4 To protect water quality and aquatic species, refueling, maintaining equipment, and storing fuels or other toxicants should not occur in riparian management zones.

Related Plan Content for Riparian Management Zones

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Streams (WSW-RMZ-STM)

Stream ecosystems have flowing water and include rivers, creeks, streams, and their associated riparian vegetation zones and flood plains. There are microhabitats, such as riffles, pools, and backwaters. They provide unique habitats for plants, animals, and micro-organisms that are specialized to live in and around water. Stream ecosystems moderate flood events and collect and transport water, sediment, and organic material from upslope and upstream (supporting, regulating and provisioning ecosystem services). Lush stream corridors and cool water attract campers, hikers, and fishermen (cultural ecosystem services).

Stream ecosystems provide water, forage, shelter, and habitat for nesting, roosting, and bedding and are among the most important habitats for wildlife on the Carson NF. Species that require water for all or part of their life cycles (i.e., aquatic and semiaquatic species) are entirely dependent on limited and scattered water sources on the forest. Twenty-seven percent (3 out of 11) of the native fish species on the Carson NF are considered species of conservation concern (SCC).

There are three types of streams on the Carson NF - ephemeral, intermittent, and perennial. They differ in the timing and duration of waterflow and corresponding vegetation. Ephemeral streams flow for short duration in response to storm events. Intermittent streams flow seasonally, usually in response to snowmelt, and may contain perennial pools. Perennial streams flow year-round, though some of their flows may be below the surface.

Stream Desired Conditions (FW-WSW-RMZ-STM-DC)

1 Stream ecosystems, riparian zones, and associated stream courses are functioning properly (have a proper functioning condition rating according to BLM's proper functioning condition protocol, or a similar metric) and are resilient to human and natural disturbances (e.g., flooding) and climate change. Fluctuations in flow promote the natural movement of water, sediment, and woody debris. Flooding creates a mix of stream substrates for fish habitat, including clean gravels for fish spawning and sites for germination and establishment of riparian vegetation.

2 Stream ecosystems, including ephemeral watercourses, are not fragmented by infrastructure or development. Streams provide connectivity important for dispersal, access to new habitats, perpetuation of genetic diversity, as well as nesting and foraging for at-risk species.

3 Aquatic species are able to move throughout their historic habitat including opportunities for seasonal and opportunistic movements. Barriers to movement only exist to protect native aquatic species from nonnative aquatic species or for agricultural benefit (e.g., headgates).

4 Streams and their adjacent floodplains are connected and capable of filtering, processing, and storing sediment; aiding floodplain development; facilitating floodwater retention; withstanding high flow events; and increasing groundwater recharge.

5 Water quality meets or surpasses State of New Mexico water quality standards for designated uses.

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6 The quantity and timing of stream flows are sustained at levels that maintain or enhance essential ecological functions, including channel and floodplain morphology, groundwater recharge, water quality, and stream temperature regulation.

7 Channel type (width/depth ratio, sinuosity, gradient, etc.) is appropriate for the landscape setting (i.e., landform, geology, bioclimatic region). Stream channels are vertically stable.

8 Woody and herbaceous overstory and understory regulate stream temperatures and maintain soil moisture in the riparian zone.

9 Habitat conditions are capable of supporting self-sustaining native aquatic species populations. These habitat conditions include stream characteristics (i.e., riffles, runs, pools, and channel meandering) that allow for natural processes to occur (e.g., floodplain connectivity and sediment transport). Quality aquatic habitat is provided by overhanging banks, woody and herbaceous overstory, and instream large woody debris, to regulate stream temperatures, maintain soil moisture, and provide cover for riparian species along streams.

10 In forested streams, large woody debris consists of greater than 30 pieces per mile, greater than 12 inches in diameter, and greater than 35 feet in length.

11 Ungulate trampling does not significantly increase soil bulk density between years; change the structure of the plant community; or impede geomorphological development of streambank-channel geometry.

Stream Objectives (FW-WSW-RMZ-STM-O)

1 Restore or enhance at least 100 – 150 miles of stream habitat, during each 10-year period following plan approval.

2 Repair at least 2 road/stream crossings every 5 years at locations where chronic sedimentation causes are found. For example, up-size culverts, reduce sediment delivery to waterways from roads, or realign stream constraining road segments. Give precedence to road crossings that are causing unacceptable road damage.

Stream Standards (FW-WSW-RMZ-STM-S)

1 Management activities in and around streams shall use decontamination procedures to prevent the spread of non-desirable fungus, disease, nonnative and/or invasive biota.

Stream Guidelines (FW-WSW-RMZ-STM-G)

1 Management of streams should include adequate vegetation cover and width-to-depth ratio to move toward State of New Mexico standards for stream water temperatures.

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2	Downed woody material in stream channels should be retained, to improve channel morphology, except where safety is a concern.
3	Streambed should contain less than 20% fines (sand, silt, clay) in riffle habitat, to maintain fish spawning.
4	Stream banks should be less than 10% unstable (lineal stream bank distance), to reduce erosion and sedimentation.
5	To protect water quality and aquatic species, heavy equipment and vehicles that are driven into a stream should be completely cleaned of petroleum-based fluid residue and not leak.

At-risk Species for Streams

- Northern leopard frog
- Rio Grande cutthroat trout
- Rio Grande chub
- Rio Grande sucker

Related Plan Content for Streams

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Waterbodies (WSW-RMZ-WB)

Waterbodies include lakes, ponds, and reservoirs. They store water and support recreation and fisheries (regulating and cultural ecosystem services). They provide unique habitats for plants, animals, and micro-organisms that are specialized to live in and around water. Together with their associated riparian ecosystems they are among the most important habitats for wildlife on the Carson NF, providing water, forage, shelter, and habitat for nesting, roosting, and bedding. Species that require water for all or part of their life cycle (i.e., aquatic and semiaquatic species) are entirely dependent on the limited and scattered water resources on the forest. Many smaller waterbodies on the Carson NF are constructed or modified, which improves water availability for livestock and wildlife (provisioning ecosystem services), but impounds water that would otherwise supply perennial or intermittent streams.

Waterbody Desired Conditions (FW-WSW-RMZ-WB-DC)

1 Lakes, natural ponds, and their associated wetlands have the necessary soil, water, and vegetation attributes (e.g., diverse age classes and diverse composition of native plant species) to be resilient to human and natural disturbances and changing climate conditions across the landscape.

2 Waterbodies support native biotic communities. In other words, there is adequate riparian vegetation and large woody debris to provide habitat. Consistent with site capability, native vegetation around lakes and ponds exhibits various age classes and diverse composition of native species (e.g., grasses, forbs, sedges, shrubs, and deciduous trees) and includes species that indicate maintenance of riparian soil moisture characteristics (e.g., sedges, rushes, willows, and other riparian vegetation). Vegetation associations are variable depending on waterbody size, location, and type and may include aquatic plants or algae, submergent and floating vegetation, emergent vegetation, grasses, forbs, sedges, shrubs, and deciduous trees.

3 The physical and biological components of lakes and ponds provide habitat for a diverse community of riparian and aquatic species, including cover, forage, available water, microclimate, and nesting/breeding habitat.

4 Hydrophytes and emergent vegetation exist in patterns of natural abundance in waterbodies and associated wetlands, at levels that reflect climatic conditions. Overhanging vegetation and floating plants (e.g., water lilies), exist where they naturally occur.

5 Water quality and quantity of waterbodies meet the needs of wildlife and designated uses, consistent with water rights and site capability.

6 Ungulate trampling does not significantly increase soil bulk density between years or change the structure of the plant community around lakes and natural ponds.

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Waterbody Standards (FW-WSW-WB-S)

1	Management activities in and around waterbodies shall use decontamination procedures to prevent the spread of non-desirable fungus, disease, nonnative and/or invasive biota.

Waterbody Guidelines (FW-WSW-WB-G)

1	To protect water quality and aquatic species, heavy equipment and vehicles that are driven into a waterbody should be completely cleaned of petroleum-based fluid residue and not leak.

At-risk Species for Waterbodies

- Northern leopard frog
- Western boreal toad (Tres Piedras and Canjilon Ranger Districts)
- Rio Grande cutthroat trout
- Rio Grande chub
- Rio Grande sucker

Related Plan Content for Waterbodies

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Springs and Seeps (WSW-RMZ-SNS)

Seeps and springs occur where groundwater emerges on sloping terrain, toe-slope breaks, and geologic formation transition zones. The may contribute to stream flow or infiltrate through the immediate geology back to the groundwater (regulating ecosystem services). Seeps are a particular type of spring with low flow that filters to the surface through permeable soils and substrates. Springs are highly productive habitats what may be in otherwise low productivity arid landscapes. Springs and their associated wetlands are frequently more biologically diverse and ecologically stable than surrounding upland ecosystems in arid regions, and they may offer biological refugia for some species, particularly those that are narrowly endemic (supporting ecosystem services).

There are multiple types of springs on the Carson NF that vary based on landform and geology. Examples include seeps and hanging gardens. Springs often have important traditional, cultural significance to humans inhabiting arid landscapes and provide many cultural and recreational opportunities (cultural ecosystem services). Contemporary uses consist of contributions to potable community water supplies and agricultural uses, such as livestock watering (provisioning ecosystem services). These uses are vital to domestic and commercial interests in and around the Carson NF (provisioning ecosystem services). Springs are also important to tribes and pueblos that have traditionally used lands within the Carson NF (cultural ecosystem services).

Springs and Seeps Desired Conditions (FW-WSW-RMZ-SNS-DC)

1 Seeps and springs and their associated streams and wetlands have the necessary soil, water, and vegetation attributes to be resilient to human and natural disturbances and changing climate conditions and are properly functioning across the landscape according to their type and capability (have a proper functioning condition rating according to BLM's proper functioning condition protocol, or a similar metric). Water flow patterns, recharge rates, and geochemistry are similar to historic levels and persist over time.

2 Consistent with site capability, native vegetation around seeps and springs exhibits diverse age classes and diverse composition of native species and includes species that indicate maintenance of riparian soil moisture characteristics (e.g., sedges, rushes, willows, and other riparian vegetation). Vegetation associations are variable depending on seep or spring type and may include aquatic plants or algae, submergent and floating vegetation, emergent vegetation, grasses, forbs, sedges, shrubs, and deciduous trees.

3 The physical and biological components of seeps and springs provide habitat for a diverse community of riparian and aquatic species, including cover, forage, available water, microclimate, and nesting/breeding habitat.

4 Hydrophytes and emergent vegetation exist in patterns of natural abundance in springs and associated wetlands at levels that reflect climatic conditions. Overhanging vegetation and floating plants (e.g., water lilies) exist where they naturally occur.

5 Seeps and springs provide sufficient water to maintain essential ecological functions.

6 Seep and spring ecosystems are not fragmented by infrastructure or development, consistent with valid existing water rights. Springs are rarely developed or altered by

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	human-made structures (e.g., head boxes, cisterns, and pipelines) consistent with valid existing water rights.
7	Water quality meets or surpasses State of New Mexico water quality standards for designated uses.
8	Microhabitat condition for bog violet (soggy soils under shrubs and willows) is present, within the capability of the vegetation conditions for at-risk species.
9	Nectar sources of thistle, horsemint, and Joe-pye weed are available for the at-risk species.

Springs and Seeps Objectives (FW-WSW-RMZ-SNS-O)

1	Improve or maintain at least 10 – 20 individual springs, during each 10-year period following plan approval.

Springs and Seeps Standards (FW-WSW-RMZ-SNS-S)

1	Management activities in and around seeps and springs shall use decontamination procedures to prevent the spread of non-desirable fungus, disease, nonnative and/or invasive biota.

Springs and Seeps Guidelines (FW-WSW-RMZ-SNS-G)

1	Spring recharge areas, where known, should be managed to maintain or improve spring discharge.

At-risk Species for Springs and Seeps

- Nokomis fritillary butterfly

Related Plan Content for Springs and Seeps

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Wetland Riparian (WSW-RMZ-WR)

Wetland Riparian vegetation communities (WR) include open water wetlands, slope wetlands, marshes, wet meadows, cienegas, bogs, and fens. WR is extensive and inclusive, occurring at nearly all elevations on the Carson NF. It supports a wide diversity of riparian and wetland herbaceous species that can vary widely with elevation, water availability, as well as biophysical characteristics (i.e., gradient, salinity), but sedges and rushes are particularly important to system function[1]. It is most common in wide, low gradient meadows, where the water table is seasonally high, soils are saturated, and trees or shrubs are mostly absent. The prevalent vegetation and aquatic life require saturated or seasonally saturated soil conditions (i.e., hydric soil) for growth and reproduction. WR on the Carson NF may be connected to groundwater or completely reliant on precipitation as its water source. Wetlands may be permanent, seasonal, temporary, or ephemeral. WR provides water storage, wildlife habitat, recreation, fisheries, and livestock watering (regulating, provisioning, and cultural ecosystem services). Drought and flooding are the primary natural disturbances and standing water and vegetation can fluctuate widely from basically nonexistent during dry periods to highly productive during wet periods. Increasing upland tree cover that reduces vegetation cover on upland soils contributes to wetland erosion and sedimentation. Fire is an infrequent disturbance but many enter from adjacent vegetation types during dry periods.

Wetland types differ in water permanency, wetland vegetation, and size. Wetlands and marshes associated with streams, springs, and waterbodies are part of the riparian management zone for those features and are often intermixed with other riparian vegetation. Slope wetlands and wet meadows often occur in a mosaic with grassland vegetation communities. Wetlands and marshes associated with streams, springs, and waterbodies are part of the riparian management zone for those features and are often intermixed with other riparian vegetation. Slope wetlands and wet meadows often occur in a mosaic with grassland vegetation communities. Ephemeral wetlands contain standing water for a portion of the year (typically from snowmelt in years when precipitation is normal to above normal) and are dry for a portion of the year. They provide important resting habitat during spring migration. Cienegas are linear streams associated with spring recharge that are primarily herbaceous and do not have woody vegetation. Bogs and fens are dominated by peat-forming grasses and mosses and act as carbon sinks since biomass production exceeds decomposition.

WR provides important habitat for wetland and riparian obligate species, such as Arizona willow, masked shrew, and water shrew. Wetlands and cienegas have historic and contemporary significance to tribes, pueblos, and traditional communities, due to the cultural value of water and because they contain traditionally used resources that are rare on the landscape (cultural ecosystem services).

Wetland Riparian Desired Conditions (FW-WSW-RMZ-WR-DC)

1	Necessary soil, hydrologic regime, vegetation, and water characteristics of WR sustain the system's ability to support unique physical and biological attributes and the diversity of

[1] WR includes the Herbaceous Riparian ERU in addition to other areas. WR does not correspond to any single TEU, but is a minor inclusion in many. WR species composition cannot be separated from that of the majority of the TEU.

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associated species (e.g., shrews and voles). Soils' ability to infiltrate water, recycle nutrients, and resist erosion is maintained and allows for burrowing by at-risk species.

2 Upland vegetation is not encroaching and the extent of wetlands is widening or has achieved its potential extent and is within the natural range of variability. Development of fens continues.

3 Wetlands have groundcover and species composition (richness and diversity) indicative of site potential. Meadows with the potential for hardwood shrubs contain a diversity of age classes (at least 2) along the banks of perennial streams.

4 Microhabitat condition for bog violet (soggy soils under shrubs and willows) is present, within the capability of vegetation conditions for at-risk species.

5 Nectar sources (e.g., thistle, horsemint, and Joe-pye weed) are available for at-risk species.

Wetland Riparian Standards (FW-WSW-RMZ-WR-S)

1 Heavy equipment and log decks shall not be staged in wetland areas.

2 In wetland areas, management activities, permitted uses, and structural developments (e.g., livestock water gaps, pipelines, or other infrastructure) may only occur when necessary to move towards water, soils, and vegetation desired conditions or to protect life and property.

3 The use of motorized equipment shall be avoided in wetland areas, except when there is a designated crossing or when short-term uses are required to improve resource conditions and maintain existing infrastructure.

At-risk Species for Wetland Riparian

- New Mexico meadow jumping mouse
- Northern leopard frog
- Western boreal toad (Tres Piedras and Canjilon RDs)
- American peregrine falcon
- Nokomis fritillary butterfly
- Masked shrew
- Spotted bat
- Water shrew
- Arizona Willow (Tres Piedras, Questa, and Camino Real RDs)

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- Robust larkspur

Related Plan Content for Wetland Riparian

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Forest, Shrub, and Scrub Riparian (WSW-RMZ-FSSR)

Forest, Shrub, and Scrub Riparian vegetation communities (FSSR) occur most frequently in wet drainages that range from narrow, steep and confined to low gradient streams with wider floodplains that provide flood terraces. The overstory may be shrubby in the case of willow-thinleaf alder sites, or tree dominated with a variety of species depending on elevation and site conditions, including spruce, narrowleaf cottonwood, and Rio Grande cottonwood. Willow species are common in the understory. Drought and flooding are the primary natural disturbances. Fire is an infrequent disturbance but many enter from adjacent vegetation types during dry periods and effects are generally less severe than in the surrounding uplands.

FSSR includes multiple ERUs that may be arranged into 3 broad groups; the Cottonwood Group, the Montane-Conifer Willow Group, and the Cottonwood Evergreen Group. On the Carson NF the Cottonwood Group includes the Narrowleaf Cottonwood/Shrub and Rio Grande Cottonwood/Shrub ERUs. The Montane-Conifer Willow Group includes the Upper Montane Conifer/Willow, Willow-Thinleaf Alder, and Ponderosa Pine/Willow ERUs. The Narrowleaf Cottonwood-Spruce ERU is the only one in the Cottonwood Evergreen Group[1].

FSSR provides important habitat, including breeding and migration, for many riparian wildlife and bird species (e.g., masked shrew, water shrew, beaver, southwestern willow flycatcher, Wilson's warbler, and yellow-billed cuckoo). Riparian areas have historic and contemporary significance to tribes and traditional communities, due to the cultural value of water and because they contain traditionally used resources that are rare on the landscape (cultural ecosystem services).

Forest, Shrub, and Scrub Riparian Desired Conditions (FW-WSW-RMZ-FSSR-DC)

1 Desired seral stage proportions for FSSR-Cottonwood Group at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early-Open	Herbaceous, open shrub cover, or seedling/sapling trees ≥ 5m tall (all cover classes)	25
Mid-Open	Shrub cover ≥ 25%, or small, medium, or large trees, open canopy, ≥ 5m tall	50
Late-Closed	Small, medium, or large trees, closed canopy, ≥ 5m tall	25
Novel	Upland dominance types and exotic vegetation	0

[1] Riparian ERUs (and thus the FSSR vegetation community) do not correspond directly to TEUs. The Assessment identified a central TEU for five of the FSSR ERUs. The central TEU is the most common ERU and has similar species composition: Willow-Thinleaf Alder = 76; Upper Montane Conifer/Willow = 94; Narrowleaf Cottonwood-Spruce = 90; Rio Grande Cottonwood/Shrub = 33; Narrowleaf Cottonwood/Shrub = 84.

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2 Desired seral stage proportions for FSSR- Montane-Conifer Willow Group at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Herbaceous, open shrub cover, or seedling/sapling trees ≥ 5m tall (all cover classes)	65
Mid-Late	Shrub cover ≥ 25%, or small, medium, or large trees, all cover classes, ≥ 5m tall	35
Novel	Upland dominance types and exotic vegetation	0

3 Desired seral stage proportions for FSSR-Cottonwood Evergreen Group at mid-scale:

Class	Description	Mid-scale Proportion (%)
Early	Herbaceous, open shrub cover, or seedling/sapling trees ≥5m tall (all cover classes)	25
Mid	Small trees, 5-12m tall, all cover classes	55
Late	Medium and large trees, ≥12m tall, all cover classes	20
Novel	Upland dominance types and exotic vegetation	0

4 Riparian forest vegetation provides nesting and foraging habitat for Neotropical migrant birds, raptors, and cavity-dependent wildlife.

5 Woody riparian species are reproducing and structurally diverse with a range of seral states present.

6 Coarse woody debris provides habitat and is being adequately recruited, to provide a reliable source of replacement.

7 Upland, dry-site vegetation is not encroaching and the extent of riparian communities is widening or has achieved it potential and is within the natural range or variability.

8 Bebb, coyote, red and Arizona willows are reproducing with a range of age classes present, where the potential for these species exists.

9 Microhabitat condition for bog violet (soggy soils under shrubs and willows) is present, within the capability of vegetation conditions for at-risk species.

10 Nectar sources of thistle, horsemint, and Joe-pye weed are available for at-risk species.

11 Moist soil conditions (e.g., thick litter layers, wet areas, coarse woody debris, and decaying debris) are maintained and well distributed, within the capacity of the vegetation community for at-risk species.

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12 Dense willow conditions (70% cover or greater) are retained for at-risk species habitat.

13 Beaver are present and play a role in wetland development and riparian dynamics.

FSSR Guidelines (FW-WSW-RMZ-FSSR-G)

1 Connectivity within FSSR should be maintained and enhanced by protecting ecological functions, tree density and growth, and native understory, to reduce the risk of predation and nest parasitism, and to provide habitat for at-risk and other wildlife species.

2 Fuelwood cutting or wood removal should be managed to protect understory species, maintain tree density (including wildlife cover and stream shading), promote large woody material recruitment, and avoid channel downcutting and accelerated erosion.

3 Large mature cottonwood trees should be protected from management activities that could degrade them as suitable habitat for at-risk species. Projects occurring in these areas should incorporate restoration prescriptions, to ensure persistence of this habitat type.

At-risk Species for Forest, Shrub, and Scrub Riparian

- Western yellow-billed cuckoo
- Southwestern willow flycatcher
- New Mexico meadow jumping mouse
- Wilson's warbler
- Nokomis fritillary butterfly
- Masked shrew
- Water shrew
- Arizona willow (Tres Piedras, Questa, and Camino Real RDs)
- Robust larkspur

Management Approaches for Forest, Shrub, and Scrub Riparian

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

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1. Consider reintroducing beaver, where habitat exists and where they historically occurred but cannot repopulate naturally.

Related Plan Content for Forest, Shrub, and Scrub Riparian

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Caves and Abandoned Mines (CAM)

Caves are natural biophysical features that include any naturally occurring void, cavity, recess, or system of interconnected passages beneath the surface of the Earth or within a cliff or ledge that is large enough to permit a person to enter, whether the entrance is excavated or naturally formed. This definition includes any fissure (large crack), lava tube, natural pit, sinkhole, karst feature or other opening which is an extension of a cave entrance or which is an integral part of the cave.

Caves may possess significant features, characteristics, values, or opportunities. Many caves also have important traditional cultural significance to tribes and pueblos (cultural ecosystem services). Currently (2017) on the Carson NF, no caves have been identified with significant biological, geological, cultural, or recreational value.

Abandoned mines are the remains of former mining operations. The Forest Service's Abandoned Mine Lands program identifies mine features posing a danger to the public, which are prioritized and identified for closure or remediation. The classification as abandoned applies when there are no entities or individuals left operating the mining activity or who have financial ties to the mine. The significance of this classification is that for most abandoned sites there is no money from the original operators available to clean up the sites. Although occasionally a responsible party can be found to contribute funds toward cleanup, the major burden falls on the Forest Service to finance cleanup and remediation. Cultural ecosystem services provided by abandoned mines include history education and recreational mine exploring, when safe and appropriate.

Caves and abandoned mines provide specialized seasonal and year-round habitats for a variety of wildlife species, including bats, cliff-nesting birds, snails, reptiles, and amphibians (supporting ecosystem services). Animal species found in these features include many species of bats and small and large mammals as opportunistic users. Bats use caves and abandoned mines as specialized niches for roosting and overwintering. Cave ecosystems rely almost entirely on the surface for nutrients. Bats deposit considerable amounts of surface nutrients into caves via guano, which can support an entire ecosystem. Eighteen bat species are known to regularly use caves or abandoned mines in the American Southwest, and New Mexico is home to all of these species.

Cave and Abandoned Mine Desired Conditions (FW-CAM-DC)

1 Cave and abandoned mine features provide microclimate (temperature and humidity) and geological features (e.g., spelothems and speleogens) for associated species (e.g., bats and snakes) that require specialized niches for roosting and overwintering.

2 Caves and abandoned mines provide undisturbed habitat for native bat species, particularly in locations known to be used for maternity or hibernation roost.

3 Archaeological, geological, and biological features of caves and abandoned mines are not disturbed by visitors.

4 Features, characteristics, values, or opportunities for which caves have been designated or nominated as "significant" are maintained.

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Cave and Abandoned Mine Standards (FW-CAM-S)

1 Abandoned mine underground workings shall not be entered unless certified as a Qualified Certified Mineral Examiner (QCME) or accompanied by a QCME.

Cave and Abandoned Mine Guidelines (FW-CAM-G)

1 Caves or abandoned mines that are to be closed should use the most currently recommended closure devices, to allow for the continued use of any species determined to be present in the cave or abandoned mine.

2 The most current Forest Service guidance or most recent decontamination procedures should be used in caves and abandoned mines to avoid spread of white-nose syndrome (*Geomyces destructans* fungus).

3 Management activities (e.g., prescribed fire, thinning) within 100 feet of a cave or abandoned mine openings should not affect microclimate conditions by altering vegetation, hydrology, and sedimentation, except where necessary to protect associated natural resources or to protect health and safety.

At-risk Species for Caves and Abandoned Mines

- Pale Townsend's big-eared bat

Management Approaches for Caves and Abandoned Mines

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Currently, neither the cause nor the transmission of white nose syndrome (WNS) is well understood; however, it is known that a cave or abandoned mine environment containing this fungus is infectious to hibernating bats. Consider the development of a response plan for WNS through continued collaboration with the US Fish and Wildlife Service (USFWS), Bat Conservation International, NM Department of Game and Fish (NMDGF), the National Speleological Society, and others with interests in conservation management for bat species.
2. Consider working with public affairs, recreation, invasive species, minerals staffs; state and other federal agency partners; and the public to internally and externally increase WNS awareness at local and regional levels.

Related Plan Content for Caves and Abandoned Mines

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Vegetation (VEG), Nonnative Invasive Plants (NIS), Recreation (REC)

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Cliffs and Rocky Features (CRF)

Cliffs and rocky features (CRF), which are common in the mountainous West, can be found across a wide elevation range spanning cool alpine landscapes to desert environments. Cliffs, rock outcrops, and talus slopes are unique habitats that increase topographic and biological diversity. On the Carson NF, these features provide important habitat for Rocky Mountain bighorn sheep, golden eagles, peregrine falcons, marmots, and pika. They also support numerous other wildlife and plant species, including rare and narrow endemics, such as small-headed goldenweed. Ecosystem services, such as rock art, rock climbing, rock hounding, and mineral exploitation, are also associated with these features (cultural and provisioning ecosystem services).

Cliff and Rocky Feature Desired Conditions (FW-CRF-DC)

1 Geological and biological features (e.g., talus slopes and rocky outcrops) of cliffs and rocky features provide wildlife and plant habitat, as well as scenic diversity.

2 Cliff ledges provide cover and nesting habitat for wildlife (e.g., raptors, snakes, bats, birds, bighorn sheep, and small mammals).

3 Rocks and rocky areas promote seedling germination and habitat conditions for wildlife and plant species.

Cliff and Rocky Feature Guidelines (FW-CRF-G)

1 Management activities affecting rockslides and talus slopes should maintain habitat and unique components (e.g., denning spaces and substrate) for wildlife (e.g., small mammals, lizards, snakes, rare plants, and land snails), to maintain the persistence or contribute to the recovery of at-risk species, unless they are to maintain designated road or trail access or protect public safety.

2 Rock climbing and related recreation activities should not disrupt the life processes of cliff or rocky feature dependent species (e.g., American peregrine falcon, spotted bat, and small-headed goldenweed), diminish the function of specialized vegetation (e.g., mosses, lichens, and small headed goldenweed), to maintain the persistence or contribute to the recovery of at-risk species.

3 Permanent fixed anchors for rock climbing should be allowed only by permit, if at risk species, scenic integrity, cultural resources, or user-conflict concerns of the climbing area are being impacted.

4 Where recreation or other management activities have the potential to trample known populations of at-risk plant species, signs should be posted educating the public to stay on designated trails, to maintain the persistence or contribute to the recovery of at-risk species.

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At-risk Species for Cliffs and Rocky Features

- Mexican spotted owl
- American peregrine falcon
- Pale Townsend's big-eared bat
- Spotted bat
- Chaco milkvetch (Canjilon RD)
- Small-headed goldenweed (Tres Piedras and El Rito RDs)
- Tufted sand verbena (Canjilon RD)

Management Approaches for Cliffs and Rocky Features

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1. Consider additional survey efforts, targeted monitoring, and research on life history and habitat needs, to fill information gaps on the rare and narrow endemic species that use cliffs and rocky features.
2. Consider working with public affairs, recreation, invasive species, and minerals staffs; state and other federal agency partners; and the public to internally and externally increase the awareness and valuation of these features, especially for threatened, endangered, and SCCs (e.g., small-headed goldenweed and peregrine falcon).
3. Consider partnering with volunteers, rock climbing organizations, other government agencies, cooperators, and permit holders to help co-manage sustainable rock climbing opportunities, including planning, design, implementation, operations, and maintenance of rock climbing areas.

Related Plan Content for Cliffs and Rocky Features

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To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of

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ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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All affected vegetation communities, Wildlife, Fish, and Plants (WFP), Recreation

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Wildlife, Fish, and Plants (WFP)

Species are dependent on the health of their habitats. Species viability is addressed in the plan by providing guidance to maintain and/or enhance habitat elements that are important for species found on the forest, in addition to addressing species-specific threats. Collectively, guidance to address species viability is found in this and other sections of this plan that relate to their habitats (e.g., Vegetation and Watersheds and Water).

The Carson NF's diverse ecosystems create a biologically rich landscape that supports a diversity of wildlife, fish, and plant populations. The forest is home to over 2,000 species of vertebrates, invertebrates, plants, bryophytes (mosses, hornworts, and liverworts), lichens, and fungi; some of which are at-risk species. At-risk species consist of 1) federal recognized threatened, endangered, proposed, and candidate species and 2) species of conservation concern (SCC). SCC are species native to, and known to occur in, the plan area; and for which there is substantial concern about the species ability to persist in the plan area. The forest currently (USDI FWS 2017) has six species that are federally listed under the Endangered Species Act of 1973 (Public Law 93-205). Two of those species have critical habitat designated on the forest. Twenty-six SCC are found on the forest.

Topographical and geological conditions, particularly between the east and west sides of the Rio Grande Gorge, provide for variation in wildlife distribution and habitat use. The spatially dissimilar nature of the east (Questa and Camino Real RDs), west (Tres Piedras, El Rito, and Canjilon RDs), and the "far west" (Jicarilla RD) influences movement patterns of wide ranging mammal herds, such as elk, mule deer, and pronghorn.

Streams, springs, groundwater, and constructed waters are centers of high biological diversity in arid landscapes, and the ecological health of these resources is important for forest ecosystem sustainability. Stream ecosystems provide water, forage, shelter, and habitat for nesting, roosting, and bedding and are among the most important habitats for wildlife on the Carson NF. Species that require water for all or part of their life cycles (i.e., aquatic and semiaquatic species) are entirely dependent on limited and scattered water sources on the forest. Collectively, these resources contribute to connecting habitat for wildlife across the landscape.

The needs of individual or groups of wildlife species include food, water, and shelter. Adequate habitat connectivity is also crucial to daily and seasonal movements, finding mates, being able to utilize available habitat across the landscape, and the ability to find new suitable habitats when landscape conditions change. Healthy, diverse vegetation and functioning ecosystem processes help ensure diversity of habitats and wildlife, while reducing risks to the sustainability of those habitats and species. In addition, unique habitats (e.g., rocky areas, unroaded areas) are necessary to sustain other species.

The Carson NF is primarily responsible for providing habitat to maintain species diversity on NFS lands. The Forest Service has ultimate responsibility over NFS lands, but the NM Department of Game and Fish (NMDGF) and the US Fish and Wildlife Service (USFWS) are the lead agencies responsible for managing most wildlife populations in New Mexico. The USFWS has primary responsibility for managing federally endangered and threatened species, as well as migratory birds, while the NMDGF is responsible for managing all other protected vertebrates, mollusks, and crustaceans. Terrestrial and aquatic species and habitats are managed in conjunction with other resources according to the Multiple Use Sustained Yield Act of 1960 (Public Law 86-517).

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For federally endangered and threatened species on the Carson NF, habitat management and compatible multiple uses are determined in accordance with Section 7 of the Endangered Species Act, as amended (Public Law 93-205).

Wildlife, fish, and plants on the Carson NF also provide ecosystem services by contributing to social vitality and quality of life and promoting recreational and educational opportunities (cultural ecosystem service). The opportunity to hunt, fish, or just commune with nature is a very important tradition for many Northern New Mexico families and communities, as well as for in-state and out-of- state tourism and recreation (cultural and provisioning ecosystem services). Generations of families have participated in these activities and they have become part of the social fabric in developing and growing family relationships (cultural ecosystem services). Many tribes also rely on wildlife, fish, and plant resources within the Carson NF, for cultural and traditional uses (cultural and provisioning ecosystem services).

Hunting and fishing opportunities are important to many local residents and visitors. The Carson NF plays a valuable role for game and fish management in Northern New Mexico. Seven of New Mexico's 11 big game species occur on the Carson NF. Five of the 10 small game species have abundant habitat on the forest, and there are also opportunities to hunt waterfowl, predators, and furbearers (cultural and provisioning ecosystem services). Fishing opportunities on the Carson NF are abundant (cultural and provisioning ecosystem services). The NMDGF manages about seven coldwater sport fish species in New Mexico, and the Carson NF provides angling opportunities for four of them in stream and lake habitats. Of the four, the subspecies Rio Grande cutthroat trout is the only native. The Carson NF provides a unique opportunity to fish for native Rio Grande cutthroat trout on 136 miles of stream.

Wildlife, Fish, and Plant Desired Conditions (FW-WFP-DC)

1 Sustainable populations of terrestrial and aquatic plant and animal species, including at-risk species, are supported by healthy ecosystems, as described by Vegetation and Watersheds and Water desired conditions.

2 Ecological conditions (Vegetation and Watersheds and Water desired conditions) affecting habitat quality, distribution, and abundance contribute to self-sustaining populations of terrestrial and aquatic plant and animal species, including at-risk species, that are healthy, well distributed, genetically diverse, and connected (on NFS lands and to adjacent public and privately conserved lands), enabling species to adapt to changing environmental and climatic conditions. Conditions as described in Vegetation and Watersheds and Water desired conditions provide for the life history, distribution, and natural population fluctuations of the species within the capability of the ecosystem.

3 Ecological conditions (Vegetation and Watersheds and Water desired conditions) provide habitat that contribute to the survival, recovery, and delisting of species under the Endangered Species Act; preclude the need for listing new species; improve conditions for species of conservation concern; and sustain both common and uncommon native species.

4 Habitat conditions (Vegetation and Watersheds and Water desired conditions) provide the resiliency and redundancy necessary to maintain species diversity and metapopulations.

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5 Habitat connectivity and distribution provide for genetic exchange, daily and seasonal movements of animals, and predator-prey interactions across multiple spatial scales, consistent with existing landforms and topography.

6 Habitat configuration and availability and species genetic diversity allow long distance range shifts of plant and wildlife populations, in response to changing environmental and climatic conditions. Barriers to movement may exist to protect native species and prevent movement of nonnative species (e.g., a fish structure to protect Rio Grande cutthroat trout from nonnative invasion).

7 Species are free from harassment and human disturbance at a scale that impacts vital functions (e.g., breeding, feeding, and rearing young) that could affect persistence of the species.

8 Plant communities across the forest are composed of a mix of native grass, wildflowers, forb, shrub, and tree species, with a diverse structure (including snags and large down woody material), diverse communities of multiple seral stage, and pattern across the forest as described in Vegetation and Watersheds and Water desired conditions, providing foraging habitat for native pollinator species.

9 Habitats on the forest allow for the maintenance and promotion of interspecific relationships (e.g., predator-prey relationships and keystone species relationships).

10 All aquatic and riparian habitats are hydrologically functioning and have sufficient emergent vegetation as described in Watersheds and Water desired conditions or site potential, as well as macroinvertebrate populations to support resident and migratory species.

11 Risk of disease transmission from permitted domestic sheep or goats to bighorn sheep is low.

Wildlife, Fish, and Plant Objectives (FW-WFP-O)

1 Restore or enhance at least 50,000 - 150,000 acres of terrestrial wildlife habitat, during each 10-year period following plan approval.

2 Reconstruct or maintain 20 - 30 existing water developments for wildlife, during each 10 year period following plan approval. Improve seep and spring function, when needed and consistent with the purpose of the development.

3 Reduce nonnative fish within native fish populations in 4 - 6 stream reaches, during each 10-year period following plan approval.

4 Improve wildlife or aquatic habitat connectivity by removing unneeded structures (e.g., fences, roads, cattleguards, culverts, and spring developments) or completing improvement projects (e.g., removing barriers and connecting fragmented habitat) in at least 10 - 20 locations, during each 10-year period following plan approval.

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5 Complete at least 5 projects to improve habitat connectivity for aquatic and riparian species (e.g., remove barriers, restore dewatered stream segments, connect fragmented habitat, wildlife passage friendly fences, etc.), during the 10 years following plan approval.

6 Complete at least 30 – 40 products or activities that educate the public, particularly youth, about wildlife, fish, and plant resources, during each 10-year period following plan approval. Examples of products include educational signs and brochures, web site pages, species checklists, presentations, and field trips.

Wildlife, Fish, and Plant Guidelines (FW-WFP-G)

1 Management activities and special uses occurring within federally listed species habitat should integrate habitat management objectives and species protection measures from the most recent approved USFWS recovery plan, to maintain the persistence or contribute to the recovery of federally listed species.

2 Where the Forest Service has entered into a signed Conservation Agreement that provides guidance on activities or actions to be carried out by the forest, those activities or actions should be undertaken consistent with the guidance found within the Conservation Agreement, to maintain the persistence or contribute to the recovery of federally listed species.

3 Management activities should avoid disturbance at known active raptor nests and fledging areas, to maintain the persistence or contribute to the recovery of at-risk species. Timing restrictions, adaptive percent utilizations, distance buffers, or other means of avoiding disturbance should be based on the best available information, as well as on site-specific factors (e.g., topography and available habitat).[1]

4 Management activities should avoid disturbance to big game species during birthing season and on winter range during the winter period, to maintain the persistence of big game species. Management activities should concentrate activities in time and/or space to reduce impacts to big game species. Timing restrictions, adaptive percent utilizations, distance buffers, or other means of avoiding disturbance should be based on the best available information, as well as site-specific factors (e.g., topography, available habitat, etc.).

5 Vegetation treatments that require seeding should utilize a mix of native plant species, to increase plant cover and improve quality and diversity of forage for both wildlife and livestock.

6 To conserve wildlife and fish habitat connectivity, constructed features (e.g., exclosures, wildlife drinkers, range improvements, fences, and culverts) should be maintained to support the purpose(s) for which they were built. Constructed features should be removed when no longer needed, in order to restore natural hydrologic function and maintain habitat connectivity.

[1] Birds known to have established nests near preexisting human activities are assumed to be tolerant of the level of activity present when the nest was established.

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7 Where known bat use and concentrations of bats occur (e.g., maternity colonies, hibernacula, or seasonal roosts), measures to maintain habitat and reduce disturbance by human activities through use of seasonal or permanent access restrictions should be used. These habitats generally include abandoned mines, caves, bridges, rock crevasses, old buildings, or tree snags.

8 New infrastructure (e.g., fences, roads, facilities, drinkers) should be designed, to improve habitat connectivity.

Wildlife, Fish, and Plant Species of Conservation Concern

- New Mexico meadow jumping mouse
- Western yellow-billed cuckoo
- Mexican spotted owl
- Southwestern willow flycatcher
- Canada lynx
- Black-footed ferret
- Northern leopard frog
- Western boreal toad (Tres Piedras and Canjilon RDs)
- American peregrine falcon
- Northern goshawk
- Pinyon jay
- Western burrowing owl
- White-tailed ptarmigan (Questa and Camino Real RDs)
- Wilson’s warbler
- Rio Grande cutthroat trout
- Rio Grande chub
- Rio Grande sucker
- Nokomis fritillary butterfly
- Gunnison’s prairie dog
- Masked shrew
- Pale Townsend’s big-eared bat

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- Spotted bat
- Water shrew
- Alpine larkspur (Questa and Camino Real RDs)
- Arizona willow (Tres Piedras, Questa, and Camino Real RDs)
- Chaco milkvetch (Canjilon RD)
- Chama blazing star (Canjilon and El Rito RDs)
- Pagosa milkvetch (Jicarilla RD)
- Ripley's milkvetch (Tres Piedras, Questa, and Camino Real RDs)
- Robust larkspur
- Small-headed goldenweed (Tres Piedras and El Rito RDs)
- Tufted sand verbena (Canjilon RD)

Management Approaches for Wildlife, Fish, and Plants

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1. Coordinate with the NMDGF, USFWS, adjacent federal and state land managers, and federally recognized tribes regarding listed and native species; reintroductions, introductions, or transplants and habitat improvements of listed or native species; control or eradication of nonnative species; and the management of sport and native fishes, including the identification of refugia for native fish.
2. Work collaboratively with the USFWS, NMDGF, and other partners to develop conservation measures (e.g., public education to reduce human impacts) to prevent listing and to aid to in the recovery and delisting of federally listed species.
3. Consider working collaboratively with federally recognized tribes and pueblos, NMDGF, state agencies, adjacent federal land managers, local agencies, USFWS, sportsman's and conservation groups, adjacent landowners, to identify wildlife migration routes and important habitat and improve or maintain connectivity for terrestrial species.
4. Consider identifying linkages and barriers to wildlife movements and mitigating impacts during project design, by working with NMDGF, NMDOT, federally recognized tribes, federal, state, and local agencies, federal and state land managers, private land owners, and other organizations.
5. Cooperate with state and federal wildlife management agencies, to minimize conflicting wildlife resource issues related to hunted, fished, and trapped species.

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6. Coordinate with the NMDGF, USFWS, sportsman's groups, the scientific community, and other stakeholders regarding information, education, and knowledge gaps as they relate to promoting and improving wildlife, fish, and plant resources and management.
7. Work collaboratively with academia, state and private forestry, Forest Service Rocky Mountain Research Station, and other groups to fill information gaps related to rare and narrow endemic species that use cliffs and rocky features.
8. Coordinate with federal and state land managers, federally recognized tribes, adjacent land owners, and other federal and state agencies, when proposing management that may impact habitat connectivity and to discuss what mitigation may be needed.
9. In coordination with NMDGF, consider "dusting" prairie dog colonies to reduce the spread of sylvatic plague.
10. To increase carrying capacity for put-and-take and wild trout fisheries, consider installing stream improvement structures and allowing beaver to build and maintain beaver dams.
11. Consider the amounts, arrangements, and condition of natural communities and habitats that benefit wildlife during planning by multiple resource areas including range, fire, and timber.

Related Plan Content for Wildlife, Fish, and Plants

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Nonnative Invasive Species (NIS)

Executive Order 13112 defines an invasive species as any plant or animal species that is nonnative[1] (or alien) to the ecosystem under consideration, and which introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species generally possess one or more of the following characteristics: aggressive and difficult to manage; poisonous; toxic; parasitic; a carrier or host of serious insect or disease; and being nonnative, new, or not common to the United States or parts thereof. Invasive species pose an increasing threat to the integrity of ecosystems by decreasing native plant and animal diversity, increasing soil erosion and sedimentation, and interfering with natural fire regimes. Some nonnative species have invasive tendencies and threaten native species, ecosystem function, and the quantity and quality of forest goods and services. Reducing the threat of aquatic and terrestrial invasive plant and animal species will allow the Carson NF to better manage resilient landscapes and species populations that have a greater capacity to survive natural disturbances and uncertain future environmental conditions, such as those driven by climate change and increasing human uses.

The nonnative species with the highest treatment priority are Class A and B noxious weeds (defined by NM Department of Agriculture), which have made significant increases in their overall population size in the plan area between 2007 and 2017. Class A and B noxious weeds currently known to the Carson NF include, but are not limited to, leafy spurge, rock snot, Canada thistle, hoary cress, and yellow toadflax. The Carson NF also has known populations of invasive animal species and diseases, including bullfrogs, whirling disease, and chytrid fungus. Similar to invasive plants, invasive animals and diseases have the potential to adversely affect native species and ecosystem function. Chytrid fungus and whirling disease has been linked to infectious disease and dramatic die-offs in amphibians and trout world-wide, while white-nose syndrome has been decimating bat populations and slowly moving westward in North America. Feral animals, including unauthorized livestock, may be an issue in the future on the Carson NF. These animals are managed by other agencies, such as the NM Livestock Board and the USDA Animal and Plant Health Inspection Service (APHIS).

Nonnative Invasive Species Desired Conditions (FW-NIS-DC)

1	Nonnative invasive plant and animal species are absent or exist at levels where they do not disrupt ecological function or affect the sustainability of native and desirable nonnative species.

Nonnative Invasive Species Objectives (FW-NIS-O)

1	Contain, control, or eradicate up to 300 – 500 acres of invasive species (e.g., musk thistle, spotted knapweed) annually.

[1] Some nonnative species are desirable and were intentionally released into the wild to establish self-sustaining populations of wildlife that meet public demands for recreation or other purposes (e.g., sport fishes). These desirable nonnative species are not likely to cause ecosystem disruption and are not addressed in this section.

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Nonnative Invasive Species Standards (FW-NIS-S)

1 Forest management activities must apply best management practices (Region 3 Soil and Water Conservation Practices Handbook) and management guidance from the most current Forest Service Southwestern Region Guidance for Invasive Species Management, to minimize the introduction or spread of invasive species, including decontamination procedures on vehicles and equipment and using weed-free products.

2 Projects, authorized activities, and special uses shall be designed (e.g., weed hay, OHV washing, waders) to reduce the potential for introduction of new species or spread of existing invasive or undesirable aquatic or terrestrial nonnative populations.

3 Domestic goats and sheep shall not be used to control invasive plants in native bighorn sheep core range.

Nonnative Invasive Species Guidelines (FW-NIS-G)

1 When drafting water from streams or other water bodies, measures should be taken to prevent entrapment of fish and aquatic organisms and the spread of parasites or disease (e.g., chytrid fungus, Didiymo, and whirling disease).[1]

2 Desirable nonnative species (e.g., brown trout, brook trout, and Kentucky bluegrass) should be managed in such a way that they do not conflict with the recovery of native species or existing multiple uses.

3 Integrated pest management (IPM) approaches and other treatments to control, treat or retreat noxious and invasive species should be used to improve watershed condition and maintain ecosystem function, while minimizing project impacts on native species.

4 If chemical application is necessary near sensitive habitat (e.g., developed sites, at-risk plants, riparian areas), techniques (e.g., buffers, type of chemical, mixture) should be applied to minimize effects on native species and sensitive habitat.

5 Ground-disturbing activities should be assessed for risk of noxious weed invasion and incorporate measures that minimize the potential for the spread of noxious and invasive species.

6 Weed-free plant material should be selected for all seeding and mulching projects, to restore natural species composition and ecosystem function to the disturbed area. Plant or seed materials should be used, which are appropriate to the site, capable of becoming established, and are not invasive.

7 Fill and rock material should be inspected for nonnative invasive plants, prior to using in a project, to control the spread on nonnative invasive plants.

[1] Guidance can be found in the most current version of Preventing Spread of Aquatic Invasive Organisms Common to the Southwestern Region Technical Guidelines for Fire Operations, Interagency Guidance and best available science.

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Management Approaches for Nonnative Invasive Species

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1. Consider prioritizing treatment based on state status, refer to the NM Department of Agriculture (NMDA) website for the "Introduced, Invasive, and Noxious Plant List".
2. Consider prioritizing inventories in areas of unique and rare habitats first and then areas of high use and disturbance second (e.g., material pits, trailheads, campgrounds, corrals, roads, boat ramps, and bridges).
3. For control of invasive species, consider prioritizing areas (e.g., wilderness, research natural areas, botanical areas, wild and scenic river areas, and riparian areas) to maintain the integrity of native species and ecosystems.
4. Coordinate with stakeholders and educate the public to reduce, minimize, or eliminate the potential introduction, establishment, spread, and impact of nonnative invasive species.

Related Plan Content for Nonnative Invasive Species

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Air Resources (AIR)

Air resources (AIR) on national forests are an important resource to be protected. Not only does the public value the fresh air and sweeping views that national forests can provide, but forest health, water quality, and fisheries can also be affected by poor air quality. The goal of air quality management is to meet human health standards, to achieve visibility goals in areas of high scenic value, and to address and respond to other air quality concerns, such as critical atmospheric pollutant loads and atmospheric deposition of acidic chemical compounds.

Human health standards are defined in the National Ambient Air Quality Standards (NAAQS) set by the Environmental Protection Agency (EPA) for seven pollutants considered harmful to public health: carbon monoxide, lead, nitrogen dioxide, particulate matter 10 microns in size or smaller (PM10), particulate matter 2.5 microns in size or smaller (PM2.5), ozone, and sulfur dioxide. Smoke impacts from wildland fires and prescribed fires can affect nearby communities.

To protect visibility in the national parks and wilderness areas of high scenic value, Congress designated all wilderness areas over 5,000 acres and all national parks over 6,000 acres as mandatory federal Class I areas in 1977, subject to the visibility protection requirements in the Clean Air Act. The Class I areas most likely to be impacted by management activities on the Carson NF are the Wheeler Peak Wilderness and the northern portion of the Pecos Wilderness. Class I areas that could be affected by projects and sources on or near the Carson NF include the San Pedro Parks Wilderness (Santa Fe NF), Bandelier National Monument (NPS), and the southern portion of the Pecos Wilderness (Santa Fe NF), all of which are south of the Carson NF.

The ecosystem services provided by air include oxygen for respiration; carbon dioxide for photosynthesis; and global redistribution of biological and physical byproducts (supporting ecosystem services), as well as the delivery of aesthetically pleasing aromas (cultural ecosystem service). These ecosystem services are generally stable and not at risk. Air quality and visibility conditions on the Carson NF are within regulatory levels and the trend, based on projected emission inventories, appears to be stable or is improving for most pollutants.

The main challenge in the future could be from both coarse and fine particulate matter, which can affect the ambient air quality and visibility on the forest. Land-use on and off the forest, as well as climate change and drought, can contribute to windblown and fugitive dust. Wildfires can also be a significant source of particulate matter and ecological restoration must take into consideration public health concerns. Additionally, the Jicarilla RD may be at risk of ozone impacts as the trend in VOCs, an ozone precursor, are increasing from natural gas development and there is a history of high ozone levels near the ranger district.

Air Resources Desired Conditions (FW-AIR-DC)

1 Good air quality contributes to visibility, human health, quality of life, economic opportunities, quality recreation, and wilderness values.

2 Air quality meets or surpasses state and federal ambient air quality standards.

3 There are no measurable disturbances to water chemistry or biotic components due to atmospheric deposition of pollutants.

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4	Smoke impacts on air quality related values are minimal.

Air Resource Guidelines (FW-AIR-G)

1	Decision documents for wildfires and prescribed burns should identify smoke sensitive areas and include management prescriptions and courses of action to mitigate impacts to air quality in those areas.
2	To reduce air impairments, dust abatement should occur during construction and road projects where dust is a potential effect.

Management Approaches for Air Resources

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1. Consider advanced notification of potential smoke from fire management activities through the media to promote public awareness and protection of human health and safety, and place smoke warning signs along roads when visibility may be reduced.
2. Consider design features, best management practices (BMPs), or mitigation measures to reduce fugitive dust where needed.

Related Plan Content for Air Resources

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Social, Cultural, and Economic Sustainability and Multiple Use

The land is a common thread that binds all people. Our mountain landscapes are a life-sustaining resource and they help us form individual and community relationships, provide for continuity of cultural identity, strengthen ancestral connections, and contribute to the economic sustainability and stability for local communities. The communities located within or surrounding the Carson NF are reflective of a diverse and rich history of people and uses connected to the forest.

Long standing, land-based, traditional communities established themselves and persisted in large part due to their proximity to needed resources. Plants were used for food, medicine, and ceremonial purposes; wood was used for construction, fencing, heat, and ceremonial fires; perennial streams were utilized for domestic needs and sometimes controlled to provide water for agricultural needs or mechanical power; pasture land was utilized and springs developed to support sheep and cattle; and arable land was utilized for crops and orchards.

The Carson NF's vision for social, cultural and economic sustainability is to manage for the health, diversity, and productivity of the forest to meet the needs of traditional communities, now and into the future. The Carson NF provides a variety of goods and services, including water, supplies of wood products, recreational opportunities, wildlife, energy, and domestic livestock forage. Sustainable management of natural resources ensures that the availability of goods and services is achieved and land productivity is maintained.

The management of ecosystems, goods, and services is interdependent and must adapt to change. The following sections guide the Carson NF's contribution to social and economic sustainability to provide people and communities with a range of social, cultural, and economic benefits for present and future generations.

Social, Cultural, and Economic Sustainability and Multiple Use is divided into multiple sections. The first two sections focus on traditional and cultural uses of traditional communities that have a long-standing history in and around the NFS lands managed by the Carson NF. These communities of Northern New Mexico include federally recognized tribes and descendants from Spain and Mexico. These sections are followed by uses that are both contemporary and have historic significance, including Rangeland and Livestock Grazing, Forestry and Forest Products, Recreation, Special Uses, and Energy and Minerals. The Heritage Resources section does not emphasize use, rather focuses on the material record of prehistoric and historic occupation and land use. These resources are an important component of the historic and contemporary uses and integral to the protection and maintenance of the cultural identity and socio-economic wellbeing of people that care about these natural landscapes.

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Northern New Mexico Traditional Communities and Uses

A traditional community refers to a federally recognized tribe or a land-based rural community that has a long-standing history in and around the lands managed by the Forest Service. There are numerous small unincorporated communities within the boundaries of the Carson NF, as well as several adjacent federally recognized tribes and small incorporated towns and villages. The Carson NF is a community forest and each of these communities is geographically and historically rooted to a particular landscape.

The Carson NF manages the natural resources and landscapes that sustain Northern New Mexico traditional communities, their cultures, and traditions. Local heritage, culture, traditions, and values have been handed down over generations and predate United States management of this area. Long-standing use of the forest and its natural resources are fundamental to the interconnected economic, social, and cultural vitality of many Northern New Mexico inhabitants, including federally recognized tribes and pueblos, Spanish and Mexican land grants-mercedes and acequias, grazing permit holders, and other rural historic communities. In managing National Forest System (NFS) lands, it is important to allow opportunities for these communities to be engaged with the forest, so that continual use of the forest for cultural and subsistence needs are supported. These important uses or "traditional uses" include:

- Use of common waters (e.g., acequias or irrigation ditches) for drinking, irrigating crops, and watering livestock.
- Use of common pasture for grazing livestock.
- Use of wood products for fuelwood, building materials, and ceremonial use.
- Collection of soils (e.g., sand, adobe, micaceous clay) and rocks for building materials and other purposes (e.g., production of crafts and ceremonial uses).
- Gathering of plants and plant products for various purposes (e.g., religious, medicinal, and consumption).
- Hunting and fishing for food and ceremonial purposes.
- Religious and ceremonial uses, including for cemeteries, pilgrimages, calvarios, and shrines.
- Recreational uses for weddings, family reunions, and dispersed camping.
- *Traditional uses are found in other section narratives and plan components throughout this forest plan, especially Federally Recognized Tribes, Rural Historic Communities, Cultural Resources, Rangelands and Livestock Grazing, Forestry and Forest Products, and Recreation.*

The desire to recognize and preserve Northern New Mexico traditional uses has been an integral part of managing the Carson NF and is reflected through various documents (e.g., 1986 Carson forest plan, 1972 Regional Forester policy memo, 1968 Hassell Report). This forest plan seeks to build upon past initiatives and continues to recognize and support the traditional uses associated with the Carson NF.

The Carson NF continues to have strong cultural and historic significance to the many diverse peoples and communities who have called Northern New Mexico home for many generations.

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nothing in plan components or design of the plan to preserve the Northern New Mexico historic and traditional uses

The forest contributes resources and uses that are important to federally recognized tribes and pueblos, land grant communities, acequia associations, traditional communities, and many contemporary residents all with historic, cultural, and socio-economic connections to the forest. To this day, these traditional communities retain a strong connection to the land and rely upon the forest and its natural resources to sustain their cultural, spiritual, and economic way of life.

Forest management needs to balance this traditional way of life, defined by cultural identity of traditional communities, and the changes brought about by increased development, tourism, recreation, and other more contemporary uses. The people of Northern New Mexico, their culture, their traditions, and their knowledge of the land must be recognized and treated as unique resources. When these unique resources are recognized, they become an asset to the Agency, and the Forest Service can serve as a viable, helpful, and productive force in maintaining and improving the many positive values inherent in Northern New Mexico and its people.

People continue to benefit directly and indirectly from a variety of ecosystem services that they obtain from the land. In addition to providing the necessary resources to sustain life, these landscapes also form an anchor for those communities, providing people a sense of identity and their place in the world. Generations of families formed communities, adapted to their environment, and developed a way of life dependent upon and complimentary of the mountain resources at hand.

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Federally Recognized Tribes (FRT)

For much of the span of human history, American Indians were the only people to occupy and use the lands that encompass the Carson NF. Their utilization of the forest and the surrounding area began with the earliest human occupation of the Western Hemisphere and persists to the present day. The land-based cultures that exist today in Northern New Mexico have relied on the forests, valleys, and water of these public lands spanning many generations.

The federal government has a trust responsibility to federally recognized tribes that arises from the United States' unique legal and political relationship with tribes. It is a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, as well as a duty to carry out the mandates of federal law with respect to all federally recognized tribes. This responsibility requires the federal government to consider the best interests of the tribes in its dealings with them and when taking actions that may affect them. In meeting these responsibilities, forest managers consult with federally recognized tribes and pueblos as sovereign entities when proposed policies or management actions may affect their interests.

The government-to-government relationship between the Forest Service and federally recognized tribes is distinct from that of other interests and constituencies under a variety of federal authorities. These authorities direct the agency to administer forest management activities and uses in a manner that is sensitive to traditional American Indian beliefs and cultural practices. The 2008 Farm Bill (Forestry Title VIII, Subtitle B (Sections 8101-8107)), as well as related authorities, is perhaps the single most important piece of legislation providing for Native American access to NFS lands and forest products. The 2008 Farm Bill and other authorities identified in Appendix C are integral in our relationship with federally recognized tribes and the basis for the plan components developed within this section of the forest plan.

The Forest Service holds in public trust a great diversity of landscapes and sites that are culturally important sites and held sacred by federally recognized tribes. Specific locations on the forest are often held in confidence to protect these important values.

The trust responsibilities are maintained through consultation and engagement between the federally recognized tribes and the Forest Service. This consultation is critical when proposed management activities have a potential to affect tribal interests, including natural or cultural resources of importance. The Carson NF consults with federally recognized tribes and pueblos that have aboriginal territories within and traditional ties to the land now administered by the forest. The Carson NF maintains government-to-government relationships with many of these federally recognized tribes and employs a variety of avenues to achieve meaningful consultation, with the preferred method being real-time, in-person dialogue between tribal leaders and Forest Service line officers.

The Carson NF shares a common boundary with the Jicarilla Apache Nation, the Picuris Pueblo, the Southern Ute Indian Tribe, and the Taos Pueblo, and is in close proximity to several other tribal communities.

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Federally Recognized Tribes Desired Conditions (FW-FRT-DC)

1 The uniqueness and values of the tribal cultures in the Southwest and the traditional uses important for maintaining these cultures are recognized and valued as important.

2 The long history of tribal communities and uses (e.g., livestock grazing, fuelwood gathering, acequias, and hunting) to NFS lands and resources are understood, and appreciated.

3 Forest resources important for cultural and traditional needs (e.g., osha, piñon nuts, okote (pitch wood), and micaceous clay), as well as for subsistence practices and economic support of tribal communities, are available and sustainable.[1]

4 Federally recognized tribes have access to sacred sites, traditional cultural properties (TCPs), and collection areas for traditional and ceremonial use.[1]

5 There are opportunities for solitude and privacy for tribal traditional and cultural activities.[1]

6 Traditional cultural properties, sacred sites, and other locations of traditional and cultural use identified as important to federally recognized tribes are unimpaired.

7 The forest provides a setting for educating tribal youth in culture, history, and land stewardship, and for exchanging information between tribal elders and youth.

Federally Recognized Tribes Standards (FW-FRT-S)

1 Confidentiality of tribal information and resources collected during consultation shall be maintained, unless permission to share information is given.

Federally Recognized Tribes Guidelines (FW-FRT-G)

1 To honor tribal privacy, requests for temporary closure orders for cultural and traditional purposes should be accommodated.

2 Consultation with federally recognized tribes should occur at the early stages of project planning and design, and tribal perspectives, needs, and concerns, as well as traditional knowledge, should be incorporated into project design and decisions.

3 Management activities and uses should be planned and administered to prevent or minimize impacts to the physical and scenic integrity of places that the federally recognized tribes regard as sacred sites, traditional or cultural properties.

[1] American Indian Religious Freedom Act (AIRFA), as amended (42 U.S.C. 1996)

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4	Human remains and cultural items disinterred from NFS lands or adjacent sites should be reburied in accordance with the requests of affiliated tribes.[1]

Management Approaches for Federally Recognized Tribes

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Coordinate with federally recognized tribes to develop collaborative proposals and implement projects of mutual benefit across shared boundaries, and use available Federally-authorized or advocated programs (e.g., Tribal Forest Protection Act of 2004 (Public Law 108-278), Collaborative Forest Restoration Program).
2. Consider developing and maintaining memoranda of understanding or other agreements, to better understand community needs and build respectful, collaborative relationships with federally recognized tribes.
3. Develop management tools (e.g., programmatic agreements, management plans, and memoranda of understanding), to manage TCPs collaboratively with associated communities.
4. In collaboration with federally recognized tribes, consider developing interpretive and educational exhibits or other media that focus on the history of the lands managed by the Carson NF, to provide the public and Forest Service employees with a greater understanding and appreciation of shared history, culture, and traditions. Social, cultural, and economic resources provide a setting for educating tribal youth in culture, history, and land stewardship, and for exchanging information between tribal elders and youth.
5. Work with the public to create awareness on the importance of TCPs and issues related to their management, while protecting confidential and/or sensitive information regarding TCPs.
6. Consider utilizing federally authorized or advocated programs (e.g., Tribal Forest Protection Act and Community Forest Restoration Program) to develop collaborative proposals and partnerships with federally recognized tribes to implement projects of mutual benefit and economic development.
7. Consider Forest Service employees to work with federally recognized tribes to understand community needs and build respectful, collaborative relationships, in order to achieve mutually desired conditions.
8. Consider providing training opportunities for Forest Service employees to gain a broader understanding of the unique legal relationship between the federal government and federally recognized tribes and pueblos; American Indian Law, customs, traditions, and values.

[1] Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (35 U.S.C. 3001)

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9. Consider incorporating native languages (e.g., Tiwa, Tewa, Athabaskan, Keres) into interpretive materials, to highlight the American Indian culture as part of the forest landscape and its surrounding areas.

Related Plan Content for Federally Recognized Tribes

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

Below are those resources which have been identified as the most important related resources to this section. It is recommended that you look at these, as well as other resources not identified below that you deem to be important to your specific project.

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Rural Historic Communities (RHC)

A rural historic community refers to the many peoples of Northern New Mexico whose families have strong historical ties to the land. The Carson NF and use of its resources are integral to the subsistence, cultural, and social values that help define the people and communities. The founding of the community generally predates the establishment of the US Forest Service. The community has a significant concentration of human activity, linkage, and continuity of land use on and/or immediately adjacent to the forest. The day-to-day occupational activities of rural historic communities are rooted in the pragmatic need to make a living and evolved on a specific landscape within or adjacent to lands now managed as the Carson NF. Occupational, subsistence, and cultural-based activities associated with rural historic communities may include livestock grazing, fuelwood gathering, logging, Christmas tree harvesting, piñon picking, medicinal plant collection, agriculture, and mining. Many of the communities within and adjacent to the national forest occupy a small land base and have limited opportunities for growth for community facilities and uses (e.g., cemeteries, dumps, domestic water, wastewater, community centers.) Acknowledging the importance of these activities and concerns to area families and communities is crucial for understanding their way of life and resolving disputes over public land and resource use.

The use of the Carson NF provides opportunities for community interaction and maintenance of traditional culture. Some rural historic communities have evolved to accommodate tourism and the increasing demand for outdoor recreation as an element of their identity, but most rural historic communities and families continue to look to the forest for economic opportunity and vitality through traditional uses.

While the Carson NF considers itself as a community forest, there are many smaller communities that call the forest home and rely upon its many resources and uses. Some people may identify with several rural historic communities. For example, some people may see themselves as being from Peñasco, a rancher, a member of a land grant, an acequia parciante, or possibly all or a combination of these. Regardless, what they have in common is a strong cultural and social tie to lands in around the Carson NF. The two communities identified below have recognition by the state as a governing body.

Land Grants-Mercedes

From the late-1600s to mid-1800s, Spain and later Mexico made land grants or “mercedes” to individuals, groups, and towns to promote development in the frontier lands that today constitute the American Southwest. The two most common types of Spanish and Mexican land grants-mercedes made in New Mexico were “community land grants” and “individual land grants”. Community land grants were typically organized around a central plaza, whereby each settler received an individual allotment for a household and a tract of land to farm, and “common land” was set aside as part of the grant for use by the entire community. Individual land grants, as its name suggests, were made in the name of specific individuals. Between 1689 and 1846, Spain and Mexico granted community and individual land grants-mercedes in what is now New Mexico and Southern Colorado.

Many traditional Hispanic communities have ties to lands on the Carson NF that were once common lands of community land grants-mercedes. The forest maintains relationships with several Spanish- and Mexican-era land grant-merced communities. Many have former common lands now administered by the Forest Service. Common lands provided land grant-merced

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communities access to grazing land, stone and clay, wood, game, fish, medicinal plants, water for agriculture and consumption, and other forest products—uses that continue today. Many land grants-mercedes are actively involved in the management and preservation of adjacent NFS lands for traditional and cultural use. Some have boards of trustees to fulfill this mission through a variety of activities, including managing, protecting and regulating uses of common lands; preserving cultural and historic resources; and partnering with the Forest Service to plan and propose forest restoration projects on NFS lands.

Acequias

Acequias are community operated and organized water irrigation systems. Many of the State's acequia associations have been in existence since the Spanish Colonial period in the 17th and 18th centuries and were historically associated with land grants-mercedes. Acequia and community ditch associations are political subdivisions of the State of New Mexico and occupy a unique place in forest management (NMSA 1978 §73-2-28). Acequias that existed on unreserved public lands for use in connection with a valid existing water right, prior to the withdrawal of public lands to create the national forests, are afforded valid rights and status under National Forest System management. Much of the water diverted by acequias comes off of NFS lands and can be affected by forest management activities upstream. Acequias are still relevant and vital water delivery and community organizing systems today. They serve as important water infrastructure for communities, and their associations are important community organizations throughout New Mexico.

Rural Historic Communities Desired Conditions (FW-RHC-DC)

1	The uniqueness and values of rural historic communities and the traditional uses important for maintaining these cultures are recognized and valued as important.
2	The long history and ties of rural historic communities and traditional uses (e.g., livestock grazing, fuelwood gathering, acequias, and hunting) to NFS lands and resources is understood and appreciated.
3	Forest resources important for cultural and traditional needs (e.g., osha, piñon nuts, okote (pitch wood), medicinal herbs, and micaceous clay), as well as for subsistence practices and economic support (e.g., livestock grazing, acequias, and forest products) of rural historic communities are available and sustainable.
4	Rural historic communities have access to places of traditional use (e.g., spiritual places, individual and group ceremonies, traditional activities, and the collection of forest products) that are important to them.
5	Acequia systems on NFS lands are accessible for operation, maintenance, repair, and improvement.
6	The forest provides a setting for educating youth in culture, history, and land stewardship, and for exchanging information between elders and youth.

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Rural Historic Communities Guidelines (FW-RHC-G)

1 Traditionally used products (e.g., fuelwood, latillas, and vigas) should be available on the forest to rural historic communities, except in areas with resource concerns or any areas otherwise restricted by standards or guidelines set forth in other sections of this plan, to move toward desired conditions.

2 Management activities should be analyzed and mitigated to prevent or minimize the physical and scenic integrity of places that rural historic communities regard as spiritually or culturally important.

3 Acequia associations should be provided access to operate, repair, maintain, and improve acequia infrastructure located on NFS lands.

4 Coordination with land grant and acequia governing bodies should occur at the early stages of planning and project design to include local perspectives, needs, concerns, and traditional knowledge.

Management Approaches for Rural Historic Communities

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. In collaboration with Northern New Mexico communities, consider developing interpretive and educational exhibits or other media that focus on the history of the lands administered by the Carson NF, to provide the public and Forest Service employees with a greater understanding and appreciation of shared history, culture, and traditions. Social, cultural, and economic resources provide a setting for educating youth in culture, history, and land stewardship, and for exchanging information between elders and youth.
2. Work with traditional communities, such as land grant-merced and acequia governing bodies, to identify partnership, education, and interpretation opportunities that can help sustain the traditional communities' heritage, language, culture, traditions, and environment in Northern New Mexico.
3. Consider ways of educating Northern New Mexico youth in local culture, history, and land stewardship, and for exchanging information between community elders and youth.
4. Consider FS employees working with traditional communities to understand their needs and build respectful, collaborative relationships, in order to achieve desired conditions.
5. Consider providing training opportunities for Forest Service employees to gain a deeper understanding of the unique traditional communities, customs, traditions, and values of Northern New Mexico.
6. Consider offering Carson NF offices as welcoming places for local community members to engage with Forest Service employees and one another, disseminate and receive

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information, and attend meetings, seminars, and exhibits that promote community knowledge and collaboration.

7. Consider holding annual meetings with land grant and acequia governing bodies, to improve communication and relationships.
8. Consider incorporating Spanish language into interpretive materials to highlight the Hispanic culture, as part of the landscape of the forest and its surrounding areas.
9. Consider ways to make fuelwood permits available locally in the field where the fuelwood opportunity is available or allow rural communities to get a fuelwood permit at the FS district office closest to them or another government office, rather than only at the district office administering the permitted area.
10. Work with land grant and acequia governing bodies, rural communities, and other community leaders to continually improve relationships and discuss shared opportunities to design projects that contribute to the cultural integrity of the many forest dependent traditional communities.
11. Work collaboratively with land grant and acequia governing bodies, rural communities and other community leaders to maintain shared infrastructure (e.g., fencing, roads, and cattleguards).

Related Plan Content for Rural Historic Communities and Uses

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

Below are those resources which have been identified as the most important related resources to this section. It is recommended that you look at these, as well as other resources not identified below that you deem to be important to your specific project.

Watersheds and Water (WSW), Rangelands and Livestock Grazing, Forestry and Forest Products, Transportation and Forest Access

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Cultural Resources (CR)

The Carson NF contains cultural and historic resources (e.g., pit houses, pueblitos, masonry structures, quarries, rock art, TCPs, and culturally modified trees) that document almost continuous human presence for at least the past 12,000 years. American Indians ancestral to the ethnic affiliations of the contemporary Pueblo, Athabascan, Ute, and Comanche people have inhabited or utilized forest resources over much of this time. Europeans began to occupy the area over 400 years ago, while the Carson NF has been under the management of the Forest Service since 1906.

Many cultural resources are also considered traditionally significant to federally recognized tribes and pueblos associated with the lands of the plan area. The Carson NF has at least 6,636 recorded cultural resources within its forest boundaries. As of July 2016, only 15% (219,713 acres) of the forest has been surveyed. Sixty-four percent (4,320) of the cultural resources recorded on the forest are prehistoric sites, 22% (1,449) are historic sites, and 10% (642) are multi-component sites. The remaining 5% (225) are unknown, with no temporally or spatially diagnostic artifacts present.

The Carson NF has six sites listed on the National Register of Historic Places (Pueblito Canyon Ruin, Pueblito Canyon East, Cabresto Mesa Tower Complex, Victor Ortega Cabin, the Ring Place and the Aldo Leopold House), with 2,588 more sites eligible for listing. In addition, there are 441 sites not eligible for listing and 3,604 sites that remain unevaluated. The Cumbres and Toltec Railroad National Historic Landmark (NHL) enters a portion of the Carson NF and the Old Spanish National Historic Trail crosses the forest. The conditions of the cultural resources on the Carson NF are most notably impacted by water/wind erosion, livestock grazing, recreation, construction, vehicular traffic, and vandalism, which fortunately, in most cases, have not been severe. Numerous cultural sites on the forest are significant social and economic contributors to the Geographic Context, region, and nation. They provide opportunities for cultural tourism, education, and research. They are also necessary for maintaining the cultural identity of the traditional communities within the Carson NF.

Cultural resources are nonrenewable with few exceptions. Once the resource has been disturbed, damaged, moved, altered, or removed, nothing can recover the information that could have been gained through analysis or replace the opportunity for individuals to understand and experience the site. Forest Service management activities, public use, and natural processes have impacted cultural resources. Damage from vandalism (e.g., pilfering) continues to be a management issue. Current forest management practices are aimed at minimizing and/or avoiding negative impacts to cultural resources.

Cultural Resources Desired Conditions (FW-CR-DC)

1 Cultural resources are stable and are maintained in a manner to not adversely affect their integrity.

2 Impacts to cultural resources from vandalism, looting, and other human impacts are minimal.

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3 The public has opportunities for learning about, appreciating, and understanding cultural resources, as well as resources significant to traditional communities.

4 The public (e.g., land grant and acequia governing bodies, rural communities) has opportunities to participate in the identification, protection, and preservation of cultural resources.

Cultural Resources Objectives (FW-CR-O)

1 Obtain at least 45 points annually for Heritage Program Managed to Standard (HPMtS) to ensure annual Heritage Program targets are met.

Cultural Resources Standards (FW-CR-S)

1 Buildings and infrastructure listed or eligible on the National Register of Historic Places shall be maintained to preserve their historic integrity, while also fulfilling their roles as administrative and recreational facilities, and other infrastructure functions.

2 Cultural artifacts shall be preserved in situ, except when endangered then they should be curated following current standards.

Cultural Resources Guidelines (FW-CR-G)

1 When adverse effects to cultural resources occur, known communities to whom the resources are important should be involved in the resolution of the adverse effects.

2 Tistoric documents (e.g., photographs, maps) should be properly preserved, and made available for research and interpretation by Forest Service, contractors, other agencies, universities, federally recognized tribes, historic Spanish/Mexican rural communities, and the public.

Management Approaches for Cultural Resources

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider synthesizing cultural resource findings and interpreting and sharing them with the scientific community, and public through prehistoric and historic contexts, formal presentations, publications, and educational venues.

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2. Consider developing a database of fire sensitive cultural sites, structures, and other resources and making it available for fire management purposes to facilitate resource protection.
3. Consider prioritizing non-project related surveys (i.e., Section 110 of the NHPA) as follows:; (1) areas indicated to have high cultural value or high density of cultural resources; (2) areas of importance to traditional communities; (3) areas where additional surveys will contribute to a greater regional understanding of a specific management unit; and (4) areas where eligible cultural resources are threatened or on-going impacts are unknown and need to be assessed.
4. Consider providing orientation and learning opportunities for Forest Service personnel, permit holders, and contractors that instill buy-in around the Section 106 process of the National Historic Preservation Act. Find teaching opportunities to educate personnel on the identification, management and protection of significant cultural resources.
5. Consider the development of opportunities for heritage tourism in concert with local communities.

Related Plan Content for Cultural Resources

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Sustainable Rangelands and Livestock Grazing (GRZ)

"The ranching tradition in northern New Mexico is long standing, enduring across many generations, 1 troduction of Livestock (1597). Livestock ownership and ranch life are powerful forces that bind familie communities, continuing a heritage that began with Spanish colonization. Owing to the history of land use and ownership in the region, many contemporary ranchers rely to a considerable degree on public land to graze their animals" (Raish and McSweeney 2003). Much of this land was formerly granted to or used by traditional communities and the ancestors of current permit holders. It is important that Forest Service management recognizes and contributes to sustaining the socio-economic needs, culture, and traditions of Northern New Mexican ranchers.

The Carson NF issues grazing permits on numerous active allotments. Almost all permit holders are local residents, living close to the allotments where they are permitted to graze. In order to respond to the cultural traditions and socio-economic needs of Northern New Mexico, the Carson NF is unique in how it administers livestock grazing on the forest. Around 25% of the permits are issued to grazing associations with multiple members. A grazing association is a group of several members who share the use of an allotment under one grazing permit. Associations are self-governed and determine how many head of livestock each member can graze within the authorized or permitted number for the allotment. The Forest Service officially recognizes the association as the sole permit holder and often deals directly with association officers for annual authorization, billing, and operating instructions.

In addition, the Carson NF administers almost 40% of the active allotments as "community" allotments. Each individual rancher has a permit for a certain number of animals, along with as many as 10 to 15 other permit holders on the same allotment. These community allotments will have an association bull permit as well, but the Forest Service works with each permit holder one-on-one. The Carson NF administers 35% of its allotments with only one permit holder. The community and association allotments were developed to be responsive to the economic and cultural needs of traditional communities. In addition to administering community allotments with multiple permits, the Carson NF has also waived an acreage minimum as long as a permit holder has the facility to water livestock, a corral or facility to handle livestock, and forage producing capability. These programs have contributed to the needs of many Northern New Mexico families.

Livestock management on NFS lands has shifted to an adaptive management philosophy that allows appropriate seasonal changes in livestock numbers 2 ncreases and decreases) or seasons of use, in response to changing ecological conditions (e.g., forage production, water availability, and precipitation patterns). Over the last decade, the Carson NF has worked with partners and permit holders to manage grazing pressure on sensitive areas (e.g., critical areas, riparian areas) through better distribution and improving forage conditions (e.g., fire use) away from sensitive areas, 3 ithout reducing livestock numbers.

Livestock grazing today plays an essential role in providing ecosystem services. Continuing this way of life on ancestral lands enhances the culture and heritage for future generations. Many people living in traditional communities participate in or have connections to ranching and identify with the associated values (cultural ecosystem service). Livestock grazing contributes to the livelihood of permit holders and to the economy of traditional communities and counties (provisioning ecosystem service). Some ecological benefits from livestock grazing include aeration of the soil through hoof action, invasive plant control, reduction of fine fuels (decadent

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no increases in livestock, huge reductions, verified, validated, peer reviewed, NMSU

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without reducing livestock numbers.

grasses and forbs), maintaining open space off-forest, increased water developments in uplands, and an important source of food and fiber (cultural and provisional ecosystem services).

Sustainable Rangelands and Livestock Grazing Desired Conditions (FW-GRZ-DC)

1	6ustainable rangelands provide forage for livestock grazing 4alid Existing Roghts 7pportunities that contribute to agricultural businesses, local employment, as well as traditional lifestyles and generational ties to the land.
2	Livestock grazing contributes to the long-term socioeconomic diversity and stability and the cultural identity of local communities.
3	Rangelands are resilient to disturbances and variations in the natural environment (e.g., fire, flood, climate variability).
4	8vestock grazing and associated management activities are compatible with ecological function and process (e.g., water infiltration, wildlife habitat, soil stability, and natural fire regimes).
5	9ative plant communities support diverse age classes of shrubs, and vigorous, diverse, self-sustaining understories of grasses and forbs relative to site potential, while providing forage for livestock.
6	Wetland and riparian areas consist of native obligate wetland species and a diversity of riparian plant communities consistent with site potential and relative to Wetland Riparian and Forest, Shrub, and Scrub Riparian desired conditions.
7	Range infrastructure functions to maintain or improve livestock grazing management and the condition of forest ecological and cultural resources.

Sustainable Rangelands and Livestock Grazing Objectives (FW-GRZ-O)

1	Through annual operating instructions (AOI), evaluate allotment management every year with permit holders for consistency with timing, intensity, and frequency of livestock grazing, to respond to changing ecological resources and the needs of grazing permit holders.
2	10prove or maintain at least 60 – 120 existing range improvements for livestock grazing, during each 10-year period following plan approval.

Sustainable Rangelands and Livestock Grazing Standards (FW-GRZ-S)

1	11estock management shall be compatible with capacity and address ecological resources (e.g., forage, invasive plants, at-risk species, soils, riparian health, and water quality) that

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Number: 1 Author: Sanchez Ranches Subject: Highlight Date: 3/24/2019 8:26:44 PM
Valid Exsisting Rights

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 3/23/2019 8:55:06 PM
Valid Exsisting Rights

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 3/24/2019 8:26:57 PM
Valid Exsisting Rights

Number: 4 Author: Sanchez Ranches Subject: Highlight Date: 3/24/2019 8:26:31 PM
Valid Exsisting Rights

Number: 5 Author: Sanchez Ranches Subject: Highlight Date: 10/19/2021 5:50:30 PM
does not definitive to valid existing rights

Number: 6 Author: Sanchez Ranches Subject: Highlight Date: 3/24/2019 8:27:19 PM
S

Number: 7 Author: Sanchez Ranches Subject: Cross-out Date: 3/23/2019 8:55:35 PM
opportunities

Number: 8 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:47:42 AM

Livestock grazing is equally as important as the ecological functions, compatibility gives USFS power to exercise, reduce fuel loads, fine fuels- equal footing and benefit to the rest of functions, recognized 1897 organic tact

Number: 9 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:50:59 AM
no control over native communities because of the over population of elk, no mangement by USFS

Number: 10 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:51:28 AM
who's going to pay for these improvements? Need to be design with sound science and impacts to existing programs

Number: 11 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:51:49 AM
"compatible", needs to be managed to sustain the program

	re departed from desired conditions, as determined by temporally and spatially appropriate data.[1]
2	New or reconstructed fencing shall allow for wildlife passage, except where specifically intended to exclude wildlife (e.g., elk exclosure fence) and/ to protect human health and safety.
3	New and reconstructed range improvements must be designed to prevent wildlife entrapment and provide safe egress for wildlife (e.g., escape ramps in water troughs and cattleguards).
4	omestic sheep allotments shall be managed (e.g., fencing, increased herding, herding dogs, disease-free domestic sheep, potential vaccine) to prevent the transfer of disease from domestic sheep to bighorn sheep, wherever bighorn sheep occur.

Sustainable Rangelands and Livestock Grazing Guidelines (FW-GRZ-G)

1	orage use should be based on current and desired ecological conditions as determined by temporally and spatially scientific data during planning cycles (e.g., annual operating instructions, permit renewal), to sustain livestock grazing and maintain ecological function and processes.[1]
2	vestock grazing within riparian management zones (RMZ) should be managed to sustain proper[2] stream channel morphology, floodplain function, and riparian vegetation desired conditions.
3	New livestock troughs, tanks, and holding facilities should be located out of riparian management zones (RMZs), to protect riparian ecological resources, unless necessary for resource enhancement or protection.
4	New range infrastructure (e.g., troughs, tanks) should be designed to avoid long-term negative impacts to soil resources (e.g., soil compaction and soil loss), to maintain hydrological function outside the structures' footprint.
5	Salting or mineral supplementation should not occur on or adjacent to areas (e.g., at-risk plant species habitat, riparian areas, wetlands, or archeological sites) that are especially sensitive to salt and to increased traffic from ungulates, to protect these sites.
6	Restocking and management of grazing allotments following a major disturbance (e.g., fire, flood) should occur on a case-by-case basis after consideration of site-specific resource conditions, to sustain livestock grazing.
7	Vacant or understocked allotments ums d be reissued or made available to permitted livestock, to provide pasture during times or events when other active allotments are unavailable and

[1] Guidance can be found in the most current Grazing Permit Administration Handbook and Regional Supplements or best available scientific information.

[2] Proper stream channel morphology and floodplain function as defined by BLM's proper functioning condition protocol, or a similar metric.

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Number: 1 Author: Sanchez Ranches Subject: Highlight Date: 3/24/2019 8:42:09 PM
are departed from desired conditions, as determined by temporally and spatially appropriate data.1

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:19:23 AM
no scientific studies to support the statement, managed with the rest of the livestock grazing program for sustainablely managed big horn sheep

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:52:29 AM
determined by land grant college, science available, goals to sustain the livestock grazing program, monitoring

Number: 4 Author: Sanchez Ranches Subject: Highlight Date: 3/23/2019 9:03:42 PM
Forage use should be based on current and desired ecological conditions as determined by temporally and spatially scientific data during planning cycle

Number: 5 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:52:55 AM
speak to the program, livestock grazing program has to managed sustainability of the program, those programs have to talk to each other

Number: 6 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:53:11 AM
langugae added by Sanchez

Number: 7 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:53:23 AM
Language added by Sanchez

Number: 8 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:53:36 AM
language added by Sanchez

Number: 9 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:53:48 AM
language added by Sanchez

require ecosystem recovery as a result of natural disturbances (e.g., wildfire) or management activities (e.g., vegetation restoration treatments).

8 Permit conversions to domestic sheep or goats should not be allowed wherever bighorn sheep occur, to prevent the transfer of disease from domestic sheep to bighorn sheep.

Management Approaches for Sustainable Rangelands and Livestock Grazing

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Forest managers cooperate, collaborate, and coordinate with permit holders to respond to changing resource conditions and manage to sustain the Livestock Program. Cooperation, collaboration and coord NF and permit holders is key to improving rangeland and forest conditions for multiple uses, moving towards desired conditions, and contributing to the socio-economic wellbeing of local communities. In addition, collaboration among stakeholders is important, including local communities; permit holders; federal, state, county and local government entities.
2. Acknowledge the importance of livestock grazing as a traditional and cultural practice that helps support the socio-economic well-being of individual families within local communities.
3. Consider large-scale landscape management for restoring rangelands and the heterogeneity of native plant species, with an emphasis on grass, forb, and shrub communities, to promote livestock grazing capacity, enhance wildlife habitat, and encourage movement towards desired conditions of NFS lands.
4. ~~Consider an adaptive management~~ Permit Plan to sustain and ~~approach to~~ manage rangelands in a manner that promotes socio-economic wellbeing and stability of local communities, ecosystem resilience, sustainability, and species diversity, based on scientifically quantified changes to rangelands. An adaptive management approach is designed to provide ~~more flexibility to~~ sustainable grazing practices, and management, while improving or maintaining the health of rangelands.
5. Invite association members and individual permit holders on range inspections, and conducting these inspections on days when most permit holders can attend.
6. Consider allowing a permit holder to take nonuse for resource protection and extending annually through a memorandum of understanding. Also, consider not reducing permit numbers based on actual use, including nonuse.
7. Where an allotment fence intersects a designated trail, consider a pass-through section (e.g., walk-through gate, self-closing gate) to provide access for recreation users, unless it interferes with range management and resource protection.
8. Facilitate a dialogue between the NMDGF and permittees about ungulates (e.g., elk, deer, and livestock) and the cumulative impacts on forest resources, hold the NMDGF to wildlife carrying capacities.

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Number: 1 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:54:20 AM
utilize data using land rant college research

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:54:36 AM
void in document, language leaves out they are realistically going to manage the livestock program

Number: 3 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:55:12 AM
added by Sanchez

Number: 4 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:55:27 AM
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Number: 5 Author: Sanchez Ranches Subject: Cross-out Date: 10/20/2021 8:19:58 AM
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Number: 6 Author: Sanchez Ranches Subject: Cross-out Date: 10/20/2021 8:20:07 AM
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Number: 7 Author: Sanchez Ranches Subject: Highlight Date: 3/23/2019 12:00:42 PM
sustainable grazing practices, and

Number: 8 Author: Sanchez Ranches Subject: Cross-out Date: 10/20/2021 8:20:20 AM
removed by Sanchez

Number: 9 Author: Sanchez Ranches Subject: Highlight Date: 3/23/2019 12:06:19 PM
hold the NMDGF to wildlife carrying capacities

Related Plan Content for Sustainable Rangelands and Livestock Grazing

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

Below are those resources which have been identified as the most important related resources to this section. It is recommended that you look at these, as well as other resources not identified below that you deem to be important to your specific project.

All affected vegetation communities, Watersheds and Water (WSW), Wildlife, Fish, and Plants (WFP), Nonnative Invasive Species (NIS), Traditional Communities – Rural Historic (TCRH)

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Sustainable Forestry and Forest Products (FFP)

Forest products include wood (timber, biomass, fuelwood) and special forest products. Special forest products include floral greenery, Christmas trees and boughs, mushrooms, wildlings (e.g., transplanted trees, shrubs, or herbaceous plants), cones, medicinal plants, cuttings, herbs, nuts, sap, berries, decorative wood, and building materials (e.g., stone, rock, gravel). National Forest System (NFS) lands were reserved with the intent of providing goods, including production of a sustainable supply of forest products and services to satisfy public needs over the long term. Over the last 15-20 years, the Forest Service emphasis has broadened over time and desired conditions for this forest plan focus on outcomes, rather than outputs. As a result, no specific timber volume outputs are desired for the Carson NF. Instead, timber production activities are considered tools that economically contribute to restoring and maintaining ecosystem diversity and supporting a viable wood products processing industry (provisioning ecosystem services).

Focus has shifted toward ecological restoration and reduction of wildfire hazard to communities and includes removal of small diameter, insect-infested, and dead and dying trees. An increasing level of regulated forest production is necessary to achieve restoration of desired conditions in forested vegetation communities at the plan scale. To facilitate achieving desired conditions, markets that will make use of forest products resulting from restoration treatments will need to be developed and supported. The forest is encouraging the expansion of wood product industries to utilize these products.

The total volume of wood products sold by the Carson NF has fluctuated over time, with an overall downward trend since the 1990s, primarily due to a change in the agency's emphasis to forest restoration, instead of timber volume. Currently, there is a directional emphasis to reduce the impacts of wildfires on communities and to restore fire-adapted ecosystems to healthy conditions. Carson NF seeks to integrate a timber and forest products program that supports industry and the general public, with managing for ecosystem health, restoring watersheds, improving wildlife habitats, and reducing hazardous fuels.

In Northern New Mexico access to wood products continues to be an important component of the local social and economic fabric. Fuelwood harvest in particular is regarded as a traditional family activity and the Carson NF is a major source of fuelwood for the many local residents who still rely on wood to heat their homes during the cold winter months (provisioning and cultural ecosystem services). The Carson NF is a major source of vigas (heavy logs that support a roof) and latillas (peeled pieces of wood laid between vigas), which are essential in building and renovating pueblo-style or territorial-style adobe homes that are characteristic of the architecture in Northern New Mexico (provisioning and cultural ecosystem services).

To address the needs of traditional communities and families the Carson NF has actively engaged in the Collaborative Forest Restoration Program (CFRP). The program provides cost-share grants to stakeholders for forest restoration projects. Since 2001, 49 CFRP projects have been awarded for restoration projects on the Carson NF. These projects result in reduced fire risk, improved watershed health, the availability of fuelwood, latillas, vigas for local families and traditional communities and commercial products for community stakeholders. The Camino Real Ranger District has managed a successful community partnership program referred to as stewardship blocks. The forest identifies parcels of land, marks trees and community members can then harvest wood from the areas. Community members get fuelwood and other wood products in return for restoration work to the forest.

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To address a variety of threats, including fire, climate change, and bark beetle infestations on the Carson NF, it is critical for the pace of restoration to increase. Two wood processing facilities operate within the assessment area, but limited wood harvesting capability potentially restrains the forest's ability to increase restoration. Loss of the region's wood harvesting and utilization infrastructure has been a critical impediment to implementing large-scale mechanical thinning treatments necessary for prompt and effective restoration of fire-adapted forests. However, small-scale operations, such as a new wood processing facility in southern Colorado near Tres Piedras RD, are signs that a competitive market for the wood fiber removed by restoration-based treatment from the Carson NF may be emerging. A viable industry would allow for forest restoration on a scale that will produce the needed widespread improvements in ecological health or reduction in the risk of high severity wildfire. The Carson NF will need to expand its capability to support industry that facilitates restoration and achieving desired conditions.

The Carson NF provides for several different ecosystem services. Wood products (e.g., fuelwood and latillas) are both cultural and provisioning ecosystem services. Gathering fuelwood is family event, but fuelwood is essential for heating homes. Forest products (e.g., Christmas trees and herb and piñon nut gathering) are cultural ecosystem services. Timber harvesting provides regulating and provisional ecosystem services. Timber harvesting opens up forests to allow for grasses to grow which improves water retention and contribute to the economy.

Timber Suitability

NFMA and the 2012 Planning Rule require that the suitability of NFS lands for timber production be analyzed. Timber production is a specific type of timber harvest for resource use and is distinct from timber harvest used as a management tool to achieve desired conditions. Timber production is the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees for industrial or consumer use. Timber production may only occur on NFS lands that are identified as being suitable for timber production (Appendix B). Timber harvest may occur on all NFS lands where not specifically prohibited (i.e., designated wilderness), including those not suited for timber production.

Table 1. Timber production suitability classification for the Carson NF forest plan

Land Classification Category	Area (acres)
A. **Total** NFS lands in the plan area	TBD
B. Lands **not suitable** for timber production due to legal or technical reasons	TBD
C. Lands that ***may* be suitable** for timber production (A−B)	TBD
D. Total lands **suitable** for timber production because timber production is compatible with the desired conditions and objectives established by the plan	TBD
E. Lands **not suitable** for timber production because timber production is not compatible with the desired conditions and objectives established by the plan (C−D)	TBD

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Land Classification Category	Area (acres)
F. Total lands **not suitable** for timber production (B+E)	TBD

The sustained yield limit is an estimate of the amount of timber which could be produced from NFS lands suitable for timber production in perpetuity. It limits the amount of timber which could be removed from a National Forest Unit except under certain exceptions which must be justified in the context of benefiting multiple-use management (Appendix B).

Table 2. Timber sustained yield limit summary by ERU

Forest Type/Vegetation Community	Yield Board Feet (9"+ dbh)	Yield Cubic Feet (5"+ dbh)
Spruce fir forest (SFF)	TBD	TBD
Mixed conifer with aspen (MCW)	TBD	TBD
Mixed conifer with frequent fire (MCD)	TBD	TBD
Ponderosa pine (PPF)	TBD	TBD

Sustainable Forestry and Forest Products Desired Conditions (FW-FFP-DC)

1 Forest products (e.g., fuelwood, latillas, vigas, Christmas trees, herbs, medicinal plants, and piñon nuts) are available to businesses and individuals in a sustainable manner (e.g., forest products recover between collections) that also effectively contributes to watershed health and the restoration and maintenance of desired vegetation conditions.

2 Forest products are available for traditional communities and culturally important activities and contribute to the long-term socioeconomic diversity and stability of local communities.

3 Forest products that are a byproduct of management activities are available for personal use (e.g., fuelwood) by the public.

4 Private and commercial timber harvest supplements other restoration and maintenance treatments at a scale that achieves landscape desired conditions and contributes to watershed restoration, function, and resilience; enhances wildlife habitat; creates opportunities for small and large businesses and employment; and provides wood products.

5 Harvest of dead and dying trees for economic value is consistent with the desired conditions of wildlife habitat, soil productivity, and ecosystem functions.

6 Theft of permitted forest products is rare.

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7	A seed stock is collected and stored to supply reforestation needs.

Sustainable Forestry and Forest Products Standards (FW-FFP-S)

1 Regulated timber harvest (tree harvest for the purpose of timber production) shall occur only on lands classified as "suitable" for timber production.[1]

2 Timber harvest shall only occur where soil, slope, and watersheds will not be irreversibly damaged, and protection must be provided for streams, streambanks, shorelines, lakes, wetlands, other waterbodies, fish, wildlife, recreation (including trails), and aesthetic resources.

3 Regeneration timber harvest shall only occur where there is reasonable assurance of adequate restocking within 5 years of harvest, based on site index.

4 Even-aged timber harvest methods shall be used only where a completed interdisciplinary team review determines them to be appropriate, and clearcutting will only be used where it is determined to be the optimum method.

5 Even-aged regeneration cuts will be shaped and blended with the natural terrain.

6 Except for harvests that are the result of a large scale disturbance event (e.g., stand replacing fire, wind storm, or insect or disease outbreak), any even-aged regeneration timber harvest operation (e.g., clearcutting, seed tree cutting, shelterwood cutting) will not exceed 40 acres without 60 days public notice and review by the Regional Forester.

7 The annual, forest-wide sale of timber shall not exceed the quantity which can be removed annually in perpetuity on a sustained-yield basis (sustained yield limit), except as defined in NFMA.[2]

8 Harvesting systems shall primarily be selected for their ability to move toward ecological desired conditions for the site and not for their ability to provide the greatest dollar return or unit output of timber.

Sustainable Forestry and Forest Products Guidelines (FW-FFP-G)

1 On suitable timberlands, even-aged stands should have reached or surpassed 95% of the culmination of mean annual increment prior to having a regeneration harvest, unless it is needed to (1) reduce fire hazard within the wildland-urban interface (WUI); (2) contribute toward achieving the desired uneven-aged vegetation conditions over the long term; or (3)

[1] Management activities to meet resource objectives other than timber production (e.g., fuelwood harvest, thinning, habitat enhancement) are permitted on all lands, "suitable" and "not suitable". For example, timber harvest for purposes other than timber production may be necessary to enhance habitat for threatened and endangered species or to improve conditions within a wildland urban interface (WUI) or in recreation sites.

[2] 16 U.S. Code § 1611(a)(b)

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treat unsustainable stand conditions resulting from insects, disease, or other damage agents.

2 On lands classified as not suited for timber production, timber harvesting should only be used for making progress toward ecological desired conditions or for salvage, sanitation, public health, or safety.

3 Log landing areas should be located outside of areas that are especially sensitive to ground disturbance (e.g., riparian management zones, archeological sites, designated trails, and along Scenery Management System Concern Level I roads), to protect the resource. When landings must be located in these areas, effects to the resource will be mitigated.

Management Approaches for Sustainable Forestry and Forest Products

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. During the planning of forest restoration projects, discussions with federally recognized tribes and land grants-mercedes that collect plants for traditional, cultural, and ceremonial purposes should be encouraged, to promote the plants' persistence.
2. Consider designing small timber contracts to accommodate small operations based in Northern New Mexico communities.
3. When planning and implementing projects, consider working collaboratively with federal, state, local governments, federally recognized tribes, and private landowners to promote integrated ecological and social-economic goals of harvesting forest products through the use of mechanisms such as Collaborative Forest Restoration Projects (CFRPs), Tribal Forest Protection Act (TFPA), youth programs, and stewardship contracting authorities to support a sustainable and appropriately-scaled industry.
4. Consider utilization of woody material that results from management activities, prior to on-site burning and chipping.
5. Consider making fuelwood more available through public access within a project area, providing some decked woody material along roads, or allowing collection within utility or road corridors that are being thinned or cleared.
6. Consider making fuelwood within a project area more available to the public, such as providing some decked woody material along roads or allowing collection within utility or road corridors that are being thinned.
7. Consider maintaining and expanding the partnership block program on the Carson NF.
8. Consider ways to inform the public of the effects from illegal wood cutting, to ensure the sustainability of quality habitat over the long-term. Illegal woodcutting reduces the quantity and quality of woodland habitat, especially piñon pine and juniper.

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9. During the planning process, consider uneven- or even-aged timber harvest methods that reflect the scale of natural disturbances and are designed to achieve desired conditions (e.g., size class distribution, species composition, patch size, fuel reduction, insect and disease).
10. Consider using even-aged management prescriptions as a strategy for achieving the desired uneven-aged conditions over the long term and/or at the landscape scale. Even-aged prescriptions are appropriate when they would increase or maintain a trajectory toward desired conditions, such as to regenerate aspen or when mistletoe infections are moderate to severe and the ability of the area to achieve the desired conditions has been significantly impaired.
11. Consider preparing pest control plans with forest health specialists that contain appropriate mitigation measures (e.g., planting resistant tree species, maintaining species diversity, removing damaged trees, and using pesticides) and monitoring procedures. Monitoring may include:
    a. Measuring effectiveness of treated areas.
    b. Determining effects on non-target organisms.
    c. Determining effects on water quality.
    d. Determining effects of pesticide that enters the soil or air.
12. Consider treatments within infrequent-fire vegetation communities (e.g., spruce-fir forest, mixed conifer with aspen, and piñon-juniper woodland) for ecological and socioeconomic benefits.
13. Consider designating and managing stands of mature and over-mature piñon for the gathering of piñon nuts and potentially the restriction the harvest of firewood in these stands.
14. Consider prioritizing utilization of woody material that results from management activities over on-site burning and chipping.

Related Plan Content for Sustainable Forestry and Forest Products

This forest plan is not an assemblage of program plans that have unique plan components for every resource. What is important is that resource plan components are looked as a whole and combined to meet the requirements for ecological integrity, diversity of plant and animal communities, multiple-use management, ecologically sustainable production of goods and services, and they contribute to economic and social sustainability. All of these requirements go hand in hand.

To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Northern New Mexico Traditional Communities and Uses, Scenery

Recreation (REC)

Over the past 30 years, the number of recreationists and businesses that support outdoor recreation have increased significantly in Northern New Mexico and on the Carson NF. The recreation-tourism industry is the largest economic contributor to the region attracting visitors from all over the country. Many come to experience the strong cultural distinctiveness and almost mystical and mythical quality the area provides, others come to partake in various outdoor summer and winter pursuits or to take in the beauty of the landscape.

Approximately one million people visit the Carson NF annually. Of those, 89% visit specifically for recreation. Non-local and local recreational visitors are fairly evenly split at 43 and 42%, respectively.[1] Hiking, walking, downhill skiing and snowboarding, and wildlife and scenery viewing are the primary recreation activities. The Carson NF is also one of New Mexico's premier destinations for year-round mountain biking. It has special trout rivers for fishing and high quality hunting units. Other important recreation activities include off-highway vehicle (OHV) and motorcycle riding, cross-country skiing, snowmobiling, gathering of forest products, and camping.

It is important that forest management recognizes that recreation is as diverse as the people who live around and use the forest. The recreation program must be responsive to the interests of local users, as well as those who come from outside the area. Recreation on the Carson NF and in Northern New Mexico takes on a different meaning for many of the local peoples and communities who have for many generations called Northern New Mexico home. For them, recreation can be more personal. It means spending time with their families to enjoy the benefits the forest has to offer. Fuelwood or piñon gathering become a family outing that may include a picnic or other family activity. A parent may take a son or daughter hunting, who in turn takes his/her child hunting. These traditional uses create strong social bonds, and for many are considered important recreation activities. Many families have a favorite spot on the forest, a dispersed camping area, a group shelter, or other location where families and friends can come together and celebrate weddings, birthdays, life-changing events, family reunions, and holidays.

Recreational opportunities can be grouped into the following types: (1) dispersed recreation; (2) developed recreation; and (3) motorized recreation. Recreational settings and experiences are defined by the Recreation Opportunity Spectrum (ROS).

Dispersed recreation is any recreation outside of a developed site. It is the most popular form of recreation on the Carson NF and includes, dispersed camping, hiking, scenic viewing, wildlife watching, horseback riding, fishing, hunting, mountain biking, and cross-country skiing. Dispersed recreation may provide a more solitary experience, access to more remote areas, a closer connection with nature, or better wildlife viewing opportunities. Secluded, less-visited spots may also provide better hunting, foraging, and fishing opportunities or a place to camp undisturbed. Among all of the dispersed uses across the forest, trail use rates the highest in both

[1] Adhikari, Dadhi and Thacher, Jennifer A. 2015. Economic impact analysis of the Carson National Forest. Albuquerque, NM: Department of Economics', University of New Mexico.

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the summer and winter. The Carson NF is also popular for large family groups that enjoy dispersed camping adjacent to Forest Service roads or water sources.

The Carson NF has a variety of developed recreation facilities, including campgrounds, picnic areas, interpretative sites, fishing piers, overlooks, and trailheads. Developed recreation provides a more accessible experience, with available parking, shelters, running water, or other facilities. In many cases these sites are a gateway to the natural benefits that the forest provides, such as trailheads and campgrounds, but others are an attraction themselves, such as group sites and fishing piers.

1 Most developed campgrounds on the Carson NF are fee sites and are operated by a concessionaire. The remaining fee sites are managed by the Forest Service through the Recreation Enhancement Act program. Some campgrounds are on a reservation system. Campgrounds are typically open from Memorial Day through Labor Day weekend. Use is highest in July and on summer holiday weekends. Most developed trailheads are near state highways and can be accessed year-round. , Due to seasonal closures or poor road conditions, remote trailheads accessed from forest roads are typically inaccessible in the winter.

Motorized recreation is popular across the Carson NF during the summer and fall. The Town of Red River draws a large number of visitors, who participate in motorized recreation activities during the summer months. In the fall hunting season, a significant increase in the use of off-highway vehicles (OHVs) occurs across the forest. Motor Vehicle Use Maps indicate where motor vehicle use is allowed on the forest and can be found on the Carson NF's Website.

The Carson NF also provides snow-mobile opportunities in the winter. Recent below normal snowfall and above normal temperatures in most of New Mexico have resulted in few places that have reliable snowpack for snowmobile use. Portions of the Tres Piedras, Questa, Canjilon, and Camino Real ranger districts are destinations for winter motorized recreation on the forest.

Outdoor recreation contributes to provisioning, cultural, and regulating ecosystem services. Activities (e.g., hunting, fishing, and fuelwood and plant gathering) are important for providing food and the social cultural fabric of many local communities (provisioning and cultural ecosystem services). These activities help maintain or control wildlife populations to improve forest and watershed health (regulating ecosystem service). Popular recreation activities (e.g., camping, hiking, biking, and skiing) help connect individuals and families to nature and contribute to tourism and the local economy (provisioning and cultural ecosystem services).

Future management of the forest recreation program must be sustainable.[1] The Carson NF needs to provide healthy, safe, and well-maintained recreation opportunities that are important to local communities and visitors to the area. Many of the recreation facilities on the forest were built 30-50 years ago and have reached the end of their useful life without significant deferred maintenance investment. Some facilities receive little or no use, and no longer serve the demand that existed in years past. A sustainable recreation program will be able to adapt to changes in demand, available resources, and opportunities. 2 The overall goal of the sustainable recreation program on the Carson NF is to:

[1] Refer to the Framework for Sustainable Recreation.

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Number: 1 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:56:38 AM
did not agree with charging fee

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:57:04 AM
language not carried over to livestock program

- Focus resources on the most appropriate recreation opportunities, to meet changing public desires and demands
- Maintain or enhance visitor satisfaction with the sites and services provided
- Meet quality health and safety standards at all developed recreation sites
- Be financially sustainable
- Be environmentally sound
- Maintain community sustainability

Sustainable recreation program goals apply to developed recreation sites, but also to the management of dispersed recreation opportunities. Because the ability to effectively maintain and manage all recreation sites is limited as a result of reduced funding, the forest will need to seek innovative opportunities to fund, maintain, and enhance desired recreation sites and infrastructure through partnership opportunities with local communities and governments, as well as organizations. Community engagement is essential for creating a sustainable recreation program.

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Recreation Desired Conditions (FW-REC-DC)

1 The unique cultural, historical, and ecological resources of the forest are featured through recreation opportunities, education, and interpretation. Visitors are connected to the importance of the past, present, and future of the forest.

2 Recreation activities important to traditional communities (e.g., hunting, fishing, camping, family or group gatherings, fuelwood or piñon nut collecting, and scenic driving) are available.

3 A variety of high quality developed and dispersed recreation opportunities and activities are available to a diverse group of forest users, including persons with disabilities. Recreation opportunities are commensurate with the recreation setting and other natural and cultural resource values.

4 Recreation opportunities are sustainable and enhance the economic, cultural, and social vitality and well-being of surrounding communities.

5 Recreation opportunities are adaptable to changing uses and trends, and are available commensurate with public interest, resource capacity, and other natural and cultural resource values.

6 Conservation education, visitor information (e.g., brochures, posters, and signage) and interpretative information engage diverse communities of visitors and locals. These resources are readily available, make use of current technology, are up-to-date, and encourage increased forest stewardship, shared use of forest recreation resources, ecological awareness, visitor orientation, and knowledge of recreation opportunities.

7 Conflicts among various recreation uses and other forest uses are rare.

8 Vandalism, littering, theft, illegal activity, or resource damage from recreation activities are minimal on the forest.

9 Recreation sites complement the forest's scenery resources and scenic character. Facilities range from primitive to highly developed, with an emphasis on blending the facilities with the natural landscape.

10 Recreation resources and facilities are well maintained and function as intended. Changes in recreational use are consistent within the recreation setting.

11 A spectrum of developed recreation opportunities characterized by varying levels of development and amenities consistent to the setting are available. The quality, locations, and variety of recreation sites and their associated amenities add to visitor satisfaction and resource protection.

12 Year-round dispersed recreation occurs in mostly undeveloped, natural areas consistent to the setting and do not impact other cultural and natural resources.

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13 A system of motorized and non-motorized trails is available in a variety of settings that provide differing levels of challenge, types of experiences, and linkages to local neighborhoods, communities, and other public lands.

Recreation Objectives (FW-REC-O)

1 Develop and implement at least 1 strategy that raises awareness of discouraged practices (e.g., illegal dumping, shooting practices, driving on closed roads) to promote visitor safety, during the 10-year period following plan approval.

2 Develop at least 2 additional methods for providing visitor information and education, during the 10-year period following plan approval.

3 Develop at least 1 collaborative partnership for the recreation program to expand public awareness, understanding, and promote responsible behavior, during the 10-year period following plan approval.

4 Modify or implement 2 actions within the Carson NF's Sustainable Recreation Strategy to maintain relevancy, every 5 years following plan approval.

5 Reduce the backlog of needed maintenance (i.e., deferred maintenance) at developed recreation areas by 50 – 60% from baseline levels, during the 10-year period following plan approval.

6 Rehabilitate 5 to 7 areas where dispersed camping is causing unacceptable erosion, during each 10-year period of the plan.

Recreation Standards (FW-REC-S)

1 No new motorized routes or areas shall be constructed or designated in primitive recreation opportunity spectrum (ROS) settings (Appendix A. ROS Map).

2 In semi-primitive non-motorized ROS settings, no new permanent motorized routes or areas shall be constructed or designated. Any temporary project-level motorized routes or temporary road construction in semi-primitive non-motorized settings must be rehabilitated within 2 years of project completion.

Recreation Guidelines (FW-REC-G)

1 Recreation activities should be compatible with and managed adaptively to prevent impacts to ecological desired conditions, including in riparian management zones and around lakes.

2 All project-level decisions and implementation activities should be consistent with mapped classes and setting descriptions in the ROS, to sustain recreation settings and opportunities.

3 Recreation facilities and improvements should be designed to prevent human and wildlife conflicts (e.g., bear-proof dumpsters, capped pipe used for fences, survey markers, and sign post, or wildlife egress in plumbing vents).

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4 Managing the use of technological devices or recreational trends at developed recreation sites should be considered on a case-by-case basis for protection of public safety and other resources, and to preserve quality recreation opportunities.

5 Dispersed sites that are no longer consistent with the area's scenic integrity objective or result in unacceptable ecological resource damage should be closed and/or rehabilitated.

Management Approaches for Recreation

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1. Consider developing a sustainable recreation strategy that is economically feasible and adaptable, to include closing or decommissioning underutilized sites and infrastructure; developing new sites or trails; and upgrading existing infrastructure to meet user needs and desires.
2. Consider providing educational, safety, and other information that enhances the visitor experience at district offices, local visitor information centers, campgrounds, and other developed recreation sites.
3. Partner with local communities, skilled stewardship organizations, volunteers, other government agencies, cooperators, and permit holders to help co-manage a sustainable recreation program, including planning, design, implementation, operations, conservation education, and maintenance. Recognize partners for their roles in providing recreational opportunities.
4. Local communities are involved in partnerships and long-term relationships with stakeholders are fostered, in order to facilitate and participate in the management of sustainable recreation on the forest.
5. Consider working with partners and volunteers in the coordination, development, and delivery of educational and community outreach programs. Actively engage urban populations, youth, and underserved communities in programs.
6. Consider coordinating with partners early in project development using a clear and concise process to elicit collaborative input on sustainable recreation opportunities, needs, and potential conflicts.
7. Consider developing motorized and non-motorized nested loop trail systems, improved connectivity of existing routes and communities, and opportunities for long distance travel.
8. Consider using a sign coordinator to build partnerships with other organizations and user groups, to design, develop, and install new interpretive, trail, and developed recreation signage.

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Related Plan Content for Recreation

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Transportation and Forest Access (TFA)

The Carson NF transportation system road network consists of thousands of miles of arterial, collector, local, and closed roads or routes ranging from maintenance level 1 (closed to public motorized uses) to maintenance level 5 (smooth surface that provides a moderate degree of user comfort and convenience at moderate travel speeds). Twenty-two bridges are also a part of the transportation system. The construction and maintenance of the road system includes the roadbed, culverts, drainages, signage, and clearing of brush and overgrowth. The forest performs routine maintenance and upkeep with a dedicated road crew and utilizes contractors for larger, complicated projects.

Forest access is also provided through a system of non-motorized and motorized trails. There are approximately 600 miles of non-motorized trails and 85 miles of motorized trails. Maintenance and improvements are completed primarily by a small seasonal crew. Future maintenance and improvement of trails will increasingly rely upon shared partnership and volunteer assistance. Trail system maintenance includes improving drainage, signage, and clearing dead and down trees and brush. Any new trails or major improvements will require substantial partner support for project planning, additional funding, analysis of effects, and implementation.

Gaining access to the forest by roads and trails is important for local residents to continue their traditional uses, which are integral in maintaining the social and cultural fabric of many traditional communities. A well planned, managed, and maintained forest transportation infrastructure allows for these opportunities.

Motorized Access (Travel Management)

From 2010 to 2013, four separate NEPA analyses were conducted to identify and designate 2,613 miles of road and 85 miles of trail open to motor vehicle use under the 2005 Travel Management Rule (36 CFR §§ 212, 251, 261, and 295). These roads and trails are identified on motor vehicle use maps (MVUMs) - (1) Jicarilla RD; (2) Tres Piedras, El Rito, and Canjilon RDs (west-side); (3) Questa RD; and (4) Camino RD. Some of the designated roads and trails are open seasonally, while others are open year-round. Currently, the Carson NF has not designated any areas open to motor vehicle use (e.g., play areas). Consistent with the Travel Management Rule, motor vehicle use off designated roads and trails identified on an MVUM is prohibited on the Carson NF.

In the winter, the Carson NF is a destination for motorized over-snow use, with portions of the Tres Piedras, Questa, Canjilon, and Camino Real ranger districts open to snowmobiling. These areas are identified on the over-snow vehicle use map (OVUM), separate from the MVUM.

The designated road and motorized trail system provides motor vehicle (e.g., autos, trucks, OHVs, UTVs, motorcycles, and e-bikes) access to areas on the Carson NF, including private land inholdings, recreation sites, fuelwood and forest product gathering areas, administrative and recreation facilities, and to support forest and resource management. This system allows visitors to gain access to the many provisioning and cultural ecosystem services important to them. Roads allow access for fuelwood gathering, hunting, fishing, hiking, mountain biking, and other forms of recreation. Local businesses and communities benefit from visitors who can safely access and experience the forest on NFS roads and trails.

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Administrative Access

The 2015 Carson NF Travel Analysis Plan identifies opportunities for decommissioning, placing into intermittent stored service, or converting to other uses, up to 1,950 miles of routes (e.g., user-created routes and old timber roads) on the forest. Motorized use of some of these routes may occur for administrative or permitted purposes. Motorized access off of the designated system (MVUM) may be required to maintain Forest Service range or wildlife developments or to access an acequia infrastructure. Restoration projects located some distance from a designated road may require a motor vehicle to transport materials and personnel. Non-Forest Service motorized access for administrative purposes is approved through a special use or grazing permit or by a district ranger, on a case-by case basis.

Administrative use of non-motorized routes supports the ability of the forest to provide ecosystem services, by allowing access for Forest Service employees to implement project work to promote the health of the forest. Healthy terrestrial, riparian, and aquatic ecosystems increase the ability of the Carson NF to provide supporting and regulating ecosystem services. While it is important to maintain these routes for administrative use, future management will consider the necessity of these routes and work to close and eliminate those that are no longer required.

Non-motorized Access

All Carson NF lands are open to the public and can be accessed through non-motorized means; however, to facilitate access and use, the forest currently maintains approximately 600 miles of non-motorized trails. Similar to the transportation system, the non-motorized trail system allows visitors to gain access to the many provisioning and cultural ecosystems services important to them. This section provides forest management for the maintenance of its trail system. The Recreation section in this plan provides forest management for the many opportunities and experiences that can be provided by a well maintained and functional trail system.

Transportation and Forest Access Desired Conditions (FW-TFA-DC)

1	Roads, bridges, and trails are maintained to standard (well-marked and provide safe and reasonable access) for public travel, recreation uses, traditional and cultural uses, and land and resource management activities, as well as contributing to the social and economic sustainability of local communities.
2	Motor vehicle use maps (MVUMs) accurately reflect current designations.
3	An adequate sign system provides for traveler safety, location information, and compliance.
4	Road and trail infrastructure has minimal impacts on ecological and cultural resources.
5	Unneeded roads, trails, and routes are closed to motor vehicle use and naturalized, to reduce impacts to ecological resources (i.e., watersheds, wildlife, and soil erosion) and improve habitat connectivity.

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Transportation and Forest Access Objectives (FW-TFA-O)

1 Obliterate or naturalize at least 20 miles of routes not identified on the MVUMs (e.g., unauthorized, decommissioned), within the 10-year period following plan approval.

2 Grade surfaces and clean culverts and ditches on at least 100 miles of open National Forest System roads annually.

3 Maintain at least 100 – 300 miles of trails (including motorized) annually.

4 Maintain at least 10 – 20 percent recreation signage, during each 5-year period of the plan.

Transportation and Forest Access Standards (FW-TFA-S)

1 Motor vehicle use off the designated system of roads, trails, and areas identified on the Carson NF's most updated motor vehicle use map (MVUM) is prohibited, except as authorized by law, permits, or orders, to protect public safety and ecological resources.

2 Over-snow use off of designated areas identified on the Carson NF's most updated over-snow vehicle use map (OVUM) is prohibited, except as authorized by law, permits, or orders, to protect public safety and ecological resources.

Transportation and Forest Access Guidelines (FW-TFA-G)

1 Reconstruction and rehabilitation of existing roads should be emphasized over new road construction, to minimize impacts on ecological and cultural resources.

2 Construction of new or temporary roads should be accompanied by a mitigating action (e.g., decommissioning, obliteration, restoration, closure) to other roads, unauthorized routes, or trails to offset any resource damage resulting from construction.

3 Temporary roads that support ecosystem restoration activities, fuels management, or other short-term projects should be closed and rehabilitated upon project completion, to protect watershed condition, minimize wildlife disturbance, and prevent illegal motorized use.

4 After management activities are completed in areas with high potential for unauthorized motor vehicle use, methods (e.g., barriers, signs, law enforcement) should be used, to prevent unauthorized motor vehicle use.

5 Bridges and other structures determined to be important habitat for at-risk wildlife (birds, bats, etc.) should be retained unless demolition is necessary to ensure public safety.

6 Road construction and maintenance activities should avoid or minimize habitat disturbance where at-risk species are present, to maintain the persistence of at-risk species.

7 To improve habitat connectivity, methods that accommodate wildlife (e.g., fencing, underpasses, overpasses, larger culverts) should be used when constructing or reconstructing highways or high traffic volume forest roads.

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8 Road and trail networks should accommodate terrestrial and aquatic wildlife species movement and habitat connectivity.

9 Trails found to adversely impact at-risk species habitats should be seasonally or permanently closed or alternative travel routes should be developed.

10 Where recreation or other management activities have the potential to trample known populations of at-risk plant species, signs should be posted educating the public to stay on designated trails and avoid impacts.

Management Approaches for Transportation and Forest Access

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1. Good relationships and communications with internal and external customers as well as partners are important. Consider notifying county and other potentially affected users (including permit holders) of changes in road status and/or significant deviations in traffic pattern of a month or greater duration.
2. Collaborative relationships with adjacent stakeholders and public land managers are actively encouraged in order to develop contiguous road and trail systems across multiple ownerships. Where possible seek opportunities for acquiring access through private lands to promote trail connectivity and manageability.
3. Consider prioritizing road system maintenance to provide safe travel on all roads, as well as to prevent or mitigate resource damage. The forest continues with current maintenance agreements and seeks to enter into new agreements with other entities including federal, state, and local government agencies, as well as private organizations/individuals.
4. While developing the proposed action for a NEPA project, consider incorporating decommissioning of roads and routes that are redundant, adversely impact flow regimes, or cause resource damage.
5. Consider predicted future runoff, when reconstructing existing or building new roads.
6. Consider maintaining a spatial database of existing routes, including roads needed for public access, future project use, administrative use, and access to private land.

Related Plan Content for Transportation and Forest Access

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Facilities Infrastructure (FAC)

The Carson NF provides for the maintenance and construction of multiple facilities and sites around the forest. Most of this work is completed through the use of qualified private contractors. Facility infrastructure includes the site (e.g., driveways, parking, landscaping), buildings, and the utilities (e.g., electric, water, wastewater) that service the site and building. The Carson NF has both administrative and recreation sites and facilities that it must maintain as safe and functional for employee and public use.

Administrative facilities are the support facilities for Forest Service personnel. Many of the Administrative facilities are accessible to the general public for getting information and buying permits. The Carson NF has many recreation facilities and sites that is manages. These include campsites, trail heads, scenic vistas, vault toilets and other structure or sites that support recreation opportunity on the forest. The forest also has 22 dams that it maintains on the forest.

Other infrastructure the forest constructs and maintains, (e.g., fish barriers and range improvements) are addressed elsewhere in the forest plan. The Carson NF also manages communication sites and utility corridors through special use permits, but does not provide the maintenance or construction of these sites. This infrastructure is addressed in the special use section of the forest plan.

Facilities contributes to ecological sustainability when it is properly designed, integrated within the landscape, and well maintained. Negative economic and social contributions would result in having to close sites, because funds are inadequate for appropriate maintenance to keep sites safe for human use. Closures would reduce or limit opportunities to access and gain enjoyment from recreational resources and experiences. Ecological damage would result from a key dam failure, site erosion, or issues with septic systems.

Recreation facilities infrastructure (i.e., campgrounds, dams that support fishing areas, scenic vistas, and toilet facilities) allow for recreation opportunities, which support communities directly (e.g., ski area and outfitter guide jobs) and indirectly (e.g., increased tourism in community lodging, shops, and restaurants). A well planned, managed, and maintained forest infrastructure allows for these opportunities.

Facilities Infrastructure Desired Conditions (FW-FAC-DC)

1	Facilities are safe, well maintained, function as intended, and accessible to persons with disabilities.
2	Facilities incorporate energy-efficient design and technology.
3	Facilities complement the forest's scenery resources and character.

Facilities Infrastructure Guidelines (FW-FAC-G)

1	Facilities no longer utilized as intended should be repurposed to accommodate a new use or be decommissioned in order to minimize maintenance backlog and infrastructure deterioration, and to protect public safety and health.

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2	Facilities and structures should be designed and maintained to prevent or mitigate impacts to terrestrial and aquatic species (e.g., bear-proof dumpsters, capped pipe used for fences, survey markers, and sign post, or wildlife egress in plumbing vents).

Related Plan Content for Facilities Infrastructure

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Scenery (SCEN)

Some of the finest mountain scenery in the Southwest is found across the Carson NF. Elevations rise from 6,000 to 13,161 feet at Wheeler Peak, the highest peak in New Mexico. The forest offers breathtaking views of far off mountains, the valley below, and unsurpassed sunsets from almost every elevation. Green forests with lingering mountain meadows, streams, colorful wild flowers, and vibrant fall colors are all peppered throughout the Carson NF's broad landscape. The forest also offers open landscapes full of desert vegetation and beautiful canyon backdrops rich in colorful clays. At night, the stars are unhindered by urban lights and provide a spectacular light show.

Research shows there is a high degree of public agreement regarding scenic preferences and people tend to value most highly more visually attractive and natural-appearing landscapes. Scenic characteristics are important in creating a sense of place for local residents and visitors alike. They provide a sense of attachment to nature and a sense of serenity or excitement, depending on the purpose of the visit. The Carson NF is the scenic backdrop for many communities in Northern New Mexico. Scenery defines the region's character and contributes to the experiences people seek on the forest (cultural ecosystem services). All landscapes have definable scenic character attributes. In most national forest settings, scenic character attributes are positive natural elements, such as landform, vegetation patterns, and water characteristics.

Scenery Desired Conditions (FW-SCEN-DC)

1 The forest contains a variety of ecologically sound, resilient, and visually appealing landscapes that sustain scenic character in ways that contribute to visitors' sense of place and connection with nature.

2 The forest appears predominantly natural and includes cultural landscapes valued by forest users and local communities for their scenic, and traditional values.

3 High quality scenery dominates the landscape in areas the public values highly for scenery (e.g., scenic byways, major roads and trails, developed recreation sites) and high scenic integrity areas (e.g., wilderness areas, wild and scenic rivers (wild classification only), inventoried roadless areas).

4 Scenery reflects ecosystem diversity, enhances recreation settings, and contributes to the quality of life for local residents and communities, as well as forest users from outside the area.

5 Scenery is enhanced or maintained to have resilience to changing conditions, while supporting ecological, social, and economic sustainability on the forest and surrounding landscapes.

Scenery Guidelines (FW-SCEN-G)

1 Constructed features, facilities, and management activities should be planned and designed to blend with the natural appearing landscape, closely following the form, line, color, texture, and pattern common to the desired scenic character.

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2 Management activities should minimize visual disturbances and be consistent with or move the area toward achieving scenic integrity objectives (Appendix A. Scenic Integrity Map):

a. In areas with very high scenic integrity objectives, the scenic character should have only minor, if any, deviations. The areas should appear unaltered and the majority of the area should be dominated by ecological changes. Range facilities are allowed, but mitigation measures should be used to minimize impacts to scenic quality.

b. In areas with high scenic integrity objectives, the scenic character should appear intact but may include deviations that are not evident (e.g., completely repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).

c. In areas with moderate scenic integrity objectives, the scenic character may appear slightly altered. Management activities, manmade structures and facilities should not dominate the scenic character (e.g., repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).

d. In areas with low scenic integrity objectives, the scenic character may appear moderately altered. Management activities including manmade structures and facilities may begin to dominate the scenic character but use scenic attributes to blend into the landscape (e.g., repeat the scenic attributes of size, shape, form, line, color, texture, or patterns common to the scenic character).

3 Management activities that result in short-term impacts inconsistent with scenic integrity objectives should achieve the scenic integrity objectives over the long-term. Short-term and long-term timeframes should be defined during site-specific project planning.

Management Approaches for Scenery

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1. The Scenery Management System (SMS) is a tool for inventorying and managing scenic resources. Consider using this system to incorporate scenery management principles into the planning, design, and implementation of projects and management activities.
2. Consider displaying interpretive or informational signs at sites with impacts to scenery to inform the public about the nature and consequences of such projects or events.
3. Consider cooperating with other entities, such as the NM Department of Transportation, Tribal and local governments, and commercial and private entities to protect scenic integrity on, and adjacent to, the Carson NF, including along scenic byways.

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Related Plan Content for Scenery

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Special Uses (SU)

Permits are authorized when the proposed activities support the Forest Service mission, meet demonstrated public needs, and are consistent with the desired conditions for the use area. Permits are a partnership between the Forest Service and private businesses, academia, non-governmental organizations, or individuals to provide these services to the public. Special uses are divided into two categories - lands and recreation. Most of the direction for managing special uses is specified in Forest Service directives.

Lands special use permits are authorized for infrastructure related uses, such as communication sites, utilities (e.g., electrical, communication, and internet lines), pipelines (e.g., natural gas, water), road access, sanitation, and alternative energy development. Activities, such as research and monitoring and commercial filming, are also permitted uses. Communication sites are critical to ensuring good communications across Northern New Mexico and contributing to national infrastructure systems. Utility and energy transmission rights-of-way, along with communication sites, are generally long-term commitments of NFS lands. Requests to use NFS lands for communication and electronic sites have increased over the past few years, and will likely increase. More demand for utility lines, renewable energy sources, community infrastructure, and private land access on NFS lands is also expected. Appendix A. displays the designated communication and electronic site and public utility corridor locations on the Carson NF.

Recreation special use permits are authorized when the proposed activities support the Forest Service mission, meet demonstrated public needs, and are consistent with the desired conditions for the use area. Permitted private commercial ventures include ski areas, outfitter/guides, events, as well as recreation residences. Issuing recreation permits enables the Forest Service and its partners to serve visitors and local communities by providing a broad range of nature- and heritage-based outdoor recreation and tourism opportunities that promote the responsible use and enjoyment by local communities and their visitors. These permitted uses also promote economic sustainability in local communities through fee retention. Permit fees from many, though not all, recreation service providers are returned to the forest and used to improve services and facilities for those permit holders, their clients, and the public.

The administration of lands special use permits seeks to minimize impacts to forest resources and ecosystem services, such as scenic vistas (cultural ecosystem service) and wildlife habitat and soil function (supporting ecosystem services), while still meeting the infrastructure needs of the public (provisioning ecosystem services). Permitted recreation activities provide the opportunity for guided hunting and fishing, or accessing a wilderness area on horseback to just experience natural surroundings in a primitive setting (cultural and provisioning ecosystem services). Recreation special use permits are mostly authorized to small businesses that help support local communities and economies (provisioning ecosystem services) and contribute to the social vitality and quality of life by promoting recreational and educational opportunities (cultural ecosystem services).

Special Uses Desired Conditions (FW-SU-DC)

1	Special uses contribute to the local economy by providing small business opportunities.

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2 Special uses activities support the public's need and do not conflict with multiple-use opportunities afforded to other Forest users.

3 The number of communication and electronic sites are the minimum required to meet the needs of the Forest Service and appropriate public services.

4 Permitted utility infrastructure is the minimum required to meet the needs of the Forest Service and is in the public interest.

5 Vegetation conditions and land uses within a right-of-way or easement facilitate the operation and management of the associated facilities and structure and may differ from the surrounding vegetation desired conditions.

6 Recreation special uses provide unique opportunities, services, and experiences for the recreating public and address a demonstrated demand for a specific recreation opportunity.

7 Services provided by recreation special uses enhance the recreation experiences of forest visitors, increase public understanding and respect for the forest and nearby communities, provide for public health and safety, and have minimal impact to ecological and cultural resources.

8 Permitted outfitter/guide activities do not conflict with the experiences of other forest visitors.

Special Uses Standards (FW-SU-S)

1 Communication and electronic equipment or system upgrades at designated sites shall not interfere with other services.

2 No new transmission utility corridors shall be designated.

3 Authorized commercial use of domestic sheep or goats (e.g., outfitter/guide and filming) in bighorn sheep ranges is prohibited.

Special Uses Guidelines (FW-SU-G)

1 Environmental disturbance should be minimized by co-locating communication and electronic equipment, pipelines, powerlines, fiber optic lines, and associated infrastructure.

2 To prevent unnecessary environmental disturbance, local energy distribution lines and smaller pipelines should be located in conjunction with the existing road system or other previously disturbed areas.

3 To prevent unnecessary environmental disturbance, Existing utility rights-of-way should be used to their capacity, before evaluating new routes.

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4	New or upgraded energy and utility lines should be located and designed to minimize impacts to wildlife, scenery, and wildfire risk.
5	Existing communication sites should be utilized prior to designation of a new site, to minimize impacts to ecological and cultural resources.
6	Organized group events (non-motorized and motorized) authorized under special use authorization should be limited to existing NFS trails and roads, suitable developed sites, or where resource impacts are determined to be minimal.

Management Approaches for Special Uses

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1. Consider authorizing special use permits for recreation events and outfitting and guiding services based on any current and future capacity studies and administrative capabilities.
2. Consider including in the operations and maintenance plan of recreation residence special uses authorizations to use the most recent edition of *A Guide to Maintaining the Historic Character of Your Forest Service Recreation Residence* for guidance on any improvements or maintenance to eligible historic or unevaluated recreation residences.

Related Plan Content for Special Uses

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Lands (LAND)

The Carson NF encompasses 1,587,097 total acres, with 1,486,372 acres administered by the Forest Service and 100,725 acres in other ownership within its boundaries. Many of the other ownership areas are small towns and communities, but a large number are small parcels of privately owned lands. In addition, much of the forest boundary adjoins state, BLM, and tribal lands. Ecological processes are seldom confined by administrative and jurisdictional boundaries; therefore, the impacts of management policies on adjacent lands must be recognized by the Carson NF. Restoration activities to improve watershed health, increase water quantity, improve water quality, generate rural prosperity, and meet a shared vision of healthy, resilient landscapes cannot happen in a fragmented manner, but must be on a scale that supersedes ownership. An all-lands approach brings landowners and stakeholders together across boundaries to decide on common goals for the landscapes they share. It brings them together to achieve long-term outcomes. Our collective responsibility is to work through landscape-scale conservation to meet public expectations for all the services people get from forests and grasslands.

The lands program identifies and maintains land line locations between NFS lands and lands of other ownership, as well as land adjustments. Boundary identification is important to prevent encroachment onto NFS lands. Land adjustments consolidate and improve management efficiency of resources through real estate transactions, including sales, purchases, exchanges, conveyances, and rights-of-way within the proclaimed Carson NF boundary.

Lands Desired Conditions (FW-LAND-DC)

1 NFS lands exist as a mostly contiguous land base that best provides for and contributes to long-term socioeconomic diversity and stability of local communities, management of vegetation and watershed health, wildlife habitat and diversity, and recreation and scenic opportunity.

2 Rights-of-way provide access to private property inholdings.

3 Forest boundaries are identified and correctly marked.

4 The transition from NFS lands to adjacent lands with similar desired conditions is seamless and does not exhibit abrupt changes in visual or ecological integrity.

Lands Guidelines (FW-LAND-G)

1 Rights-of-way for roads, utilities, and communications sites should maximize use of existing infrastructure before new uses are authorized, with the intent to minimize natural resource impacts.

2 Only one access route should be authorized to each private property inholding, regardless of the number of property owners. No new access points to private property should be authorized if a parcel is subdivided, in order to minimize natural resource impacts on National Forest System lands.

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3	Rights-of-way easements should be granted only when no other reasonable access alternatives exist, to minimize road impacts.

Management Approaches for Lands

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Collaborative relationships with adjacent stakeholders and public land managers are actively encouraged, in order to develop contiguous habitat connectivity across multiple ownerships.
2. Collaborative relationships with rural historic communities that are dependent on the forest are encouraged, to ensure traditional and cultural uses are incorporated into the management of any newly acquired lands.

Related Plan Content for Lands

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To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Wildland Fire Management (FIRE)

Wildland fire is any non-structure fire that occurs in the wildlands, including unplanned human- or naturally-caused fires or prescribed fires (i.e., planned ignitions).[1] Most of the vegetation on the Carson NF is adapted to recurrent wildland fires started by lightning from spring and summer thunderstorms. Frequent, low-intensity and low-severity fires play a vital role in maintaining the health of many fire adapted ecosystems (supporting and regulating ecosystem services). Fire - both planned and unplanned - is a tool for restoring these fire-adapted ecosystems, if properly managed. When appropriate weather and fuel conditions exist, the use of wildland fire is a cost-effective tool for reducing the likelihood of uncharacteristic wildland fire and restoring ecosystem function. The risk of uncharacteristic wildland fire can be reduced when fires occur within a vegetation type's historic fire regime. To achieve ecosystems that are resilient to fire disturbance, vegetation structure needs to be more consistent with desired conditions. In addition to fire treatments, management activities, such as thinning and tree harvesting, may be needed to reduce tree density and canopy cover and support the natural fire regime. Strategic placement and design of fuels treatments are key to efficiently minimizing the impact from fire on values to be protected because these activities are costly and there is limited capacity to implement them.

The Wildland Urban Interface (WUI) is the area or zone where structures and other human development meet and intermingle with undeveloped wildland or vegetation fuels. Generally, the WUI is a buffer of at least ½ mile around communities, private lands, or other infrastructure, though it may vary based on topography, fuels, and values at risk. This plan does not define WUI boundaries. It may be most helpful to think of the WUI not as a place, but rather as a set of conditions that can exist in and around nearly every community and surround other infrastructure. These conditions are defined by the amount, type, and distribution of vegetation; the flammability of the structures (homes, businesses, outbuildings, decks, fences) in the area and their proximity to fire prone vegetation and other combustible structures; weather patterns and general climate conditions; topography, hydrology, average lot size, road construction, and more.

Wildland Fire Management Desired Conditions (FW-FIRE-DC)

1 Wildland fires burn within the range of severity and frequency of historic fire regimes for the affected vegetation communities. High-severity fires rarely occur, where they were not historically part of the fire regime.

2 Wildland fire protects, maintains, and enhances resources and moves ecosystems toward desired conditions. Wildland fire functions in its natural ecological role on a landscape scale and across administrative boundaries, under conditions where safety and values at risk can be protected. In frequent fire systems, regular fire mitigates high-severity disturbances and protects social, economic, and ecological values at risk.

[1] Guidance for the implementation of Federal Wildland Fire Management Policy (Forest Service and DOI, 2009) provides for the consistent implementation of the 1995/2001/2003 Federal Fire Policy.

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3 Planned and unplanned natural ignitions predominate. Unplanned human caused ignitions are rare.

4 Wildland fires do not result in the loss of life, property, or cultural resources, or create irreparable harm to ecological resources.

5 Wildland fires in the WUI are predominantly low to moderate intensity. Residents living within and adjacent to the forest are knowledgeable about wildfire protection of their homes and property, including providing for defensible space.

6 Wildland fire is understood, both internally and by the public, as a necessary disturbance process integral to the function and sustainability of ecosystems.

Wildland Fire Management Standards (FW-FIRE-S)

1 Human safety shall be the highest priority in all fire response actions.

2 The response to wildfire will be spatially and temporally dynamic based on a risk management approach while accomplishing integrated resource objectives.

3 Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

4 When suppression is an objective the agency administrator must consider firefighter exposure, risk, values, cost, and likelihood of success, before trying to limit the size of wildfires.

5 Human caused fires and fires that threaten life, investments, and valuable resources (e.g., cultural resources, wildland urban interface) must be suppressed safely and cost effectively and must not be managed for resource benefits.

6 Aerial application of retardant in live water, wetlands, and riparian areas must be avoided unless necessary to protect human safety or prevent property loss.

7 Planned ignitions may be used to reduce to an acceptable level the risks and consequences of wildfire within wilderness or escaping from wilderness. Planned ignitions in wilderness areas must not be justified because they improve wildlife habitat, maintain vegetation types, improve forage production, or enhance other resource values; although these additional effects may result.

Wildland Fire Management Guidelines (FW-FIRE-G)

1 To restore fire on the landscape, naturally ignited fires (including those occurring in designated areas) should be managed to meet multiple resource objectives when fire weather conditions facilitate progress toward desired conditions (per Desired Conditions of various resources throughout the plan).

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2 Response to unplanned ignitions that cross jurisdictional boundaries should be coordinated and managed to meet the responsible agency's objectives.

3 Measures should be taken to prevent entrapment of fish and aquatic organisms and the spread of parasites or disease (e.g., chytrid fungus, Didiymo, and whirling disease), when drafting (withdrawing) water from streams or other water bodies for fire suppression activities.

4 Measures should be taken to prevent the spread of invasive plant species by equipment, personnel, or rehabilitation operations.

5 Minimum impact suppression techniques (MIST) should be used in designated areas and when impacts to sensitive resources (including wilderness and rare or sensitive plants) could result during fire suppression activities.

6 The wildland urban interface (WUI) should be spatially delineated for projects that manage toward WUI specific desired conditions, to identify where those desired condition are applicable.

7 Fire management activities should protect cultural resources, with priority given to known sites where eligibility is unevaluated and to Historic Properties.

8 Fire management activities should be conducted in a manner that avoids irreversible damage to at-risk species, to maintain the persistence of at-risk species.

9 Post-fire restoration and recovery should be provided where critical resource concerns merit rehabilitation for controlling the spread of invasive species, protecting areas of cultural concern, protecting critical or endangered species habitat, or protecting other highly valued resources.

Management Approaches for Wildland Fire Management

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1. Consider managing naturally ignited fires to meet multiple resource objectives concurrently (i.e., protection and resource enhancement) which can change as the fire spreads across the landscape. Objectives are based on interdisciplinary assessment of site-specific values used to develop incident objectives and courses of action to enhance or protect those values.
2. In areas that are moderately to highly departed from desired conditions consider accepting higher fires intensities and associated fire effects at the fine scale. Multiple small areas of high mortality may be preferable to a single large, high-severity event.

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3. Consider promoting public safety and to reducing the risk of wildfire on non-Forest Service lands by supporting the development and implementation of community wildfire protection plans (CWPPs).
4. Consider working with fire and project managers to develop practices and protocols to reduce non-prescribed human ignitions through information, education, and interpretive programs. Educate the public on their responsibility to help reduce human-caused wildfires by providing information in the form of signage, public contacts, and fire restrictions.
5. Consider planning and implementing fuels projects, planned ignitions, and all hazard response by working collaboratively with Federal, State, and local governments, and private landowners.
6. Strategize the location of treatments where they provide the most benefit and improve or maintain ecological integrity.
7. Consider assigning a Wilderness Resource Advisor to all fires in wilderness that are not suppressed during initial attack.

Related Plan Content for Wildland Fire Management

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Nonnative Invasive Species (NIS), WUI desired conditions for each vegetation community

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Mining and Minerals (MM)

Minerals of economic interest are classified as leasable, salable, or locatable. Coal, oil shale, oil and gas, phosphate, potash, sodium, geothermal resources, and all other minerals that may be acquired under the Mineral Leasing Act of 1920 (30 U.S.C. 181), as amended, are referred to as leasable minerals. Common varieties of rock, sand, stone, gravel, pumicite, and clay that may be acquired under the Materials Act of 1947 (30 U.S.C. 601–604) are considered salable minerals or common variety mineral materials. Minerals that are not salable or leasable (e.g., gold, silver, copper, tungsten, and uranium) are referred to as locatable minerals. Locatable mineral deposits include most metallic mineral deposits and certain nonmetallic and industrial minerals. Locatable minerals are subject to the General Mining Act of 1872 (30 U.S.C. 22-42), as amended, and for the most part are outside the scope of this plan.

No active locatable mineral mines occur on the Carson NF, although uranium deposits do exist and the forest has two inactive uranium mines. The forest contains numerous abandoned gold and silver mines. Several streams on the forest are used for recreational gold panning. There are known rare-earth deposits in the Petaca Mining District.

Within Valle Vidal of the Questa RD, the Valle Vidal Protection Act of 2005 (Public Law 109-385) withdraws (1) all forms of entry, appropriation, and disposal under the public land laws; (2) location, entry, and patent under the mining laws; and (3) operation of the mineral leasing and geothermal leasing laws and common variety mineral materials laws. This withdrawal is subject to valid existing rights. A private corporation currently holds coal rights on approximately 60,000 acres of Valle Vidal.

Saleable materials on the forest include sand and gravel, decorative stones, and clay. The forest provides opportunity for local communities to harvest these products from designated areas on the forest. The current use of these materials is such that existing sites can remain functional over an extended time.

Renewable energy sources on the Carson NF are limited to solar and geothermal energy. The Carson NF does not have any water resource that could support hydropower development and, due to terrain and accessibility issues, the forest is considered to have low wind power potential. The forest does have good potential to provide solar and geothermal power as a source of renewable energy. No existing renewable energy sources have been developed on the Carson NF for commercial or noncommercial use.

Mining and mineral resources provide provisioning and cultural ecosystem services important to communities and people around the forest. Provisioning ecosystem services are provided through natural gas deposits, mineral resources, renewable energy generation potential, and electric transmission lines that cross NFS lands. Cultural ecosystem services are provided by clay deposits and other stones used in artwork and traditional practices.

Mining and Minerals Desired Conditions (FW-MM-DC)

1	Energy, mineral, and mining activities meet the legal mandates to facilitate the development of minerals in a manner that minimizes adverse impacts to surface and groundwater resources, watershed and forest ecosystem health, wildlife and wildlife habitat, scenic character, and other desired conditions applicable to the area.

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2 Reclamation of energy, mining, and mineral activity sites provides for public safety and the protection of forest resources, and is conducted to return sites to a natural condition as nearly as possible.

3 Mining activities are not visually evident along major highways.

4 Information on Forest Service operating requirements and opportunities for recreational gold prospecting, gold panning, and related activities are made available on the forest.

5 Common variety mineral materials are available for personal and commercial use consistent with other resource desired conditions.

Mining and Minerals Standards (FW-MM-S)

1 Plans of operation shall be required for all locatable and leasable mineral requests.

2 Plans of operation will include contingencies to address stabilization and interim reclamation of mineral sites during periods of unforeseen shutdown according to 36 CFR 228.10. This applies to any time of mine cessation during development and production and before planned closure.

3 Site-specific reclamation plans shall be prepared as part of all plans of operation. These plans must be applicable for the setting (e.g., soils, vegetation, climate, or slope).

4 Structures and/or occupancy for mining purposes will be limited to only those that are necessary and incidental to approved mining operations.

5 Oil and gas leasing, exploration, and development is prohibited outside the Jicarilla Natural Gas Management Area (JICMA), until a leasing analysis has been conducted in accordance with 36 CFR 228 § 102.

Mining and Minerals Guidelines (FW-MM-G)

1 To reduce erosion, restoration and reclamation of surface disturbance associated with mineral activities should be implemented to achieve 70% of groundcover (as compared to nearby undisturbed areas) with permanent native vegetation within 3 growing seasons.

2 To reduce ecological impacts, reclamation should be carried out concurrently with mining. Restoration of the environment takes place at the earliest opportunity for each area on a mine site.

Management Approaches for Mining and Minerals

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illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider the potential to use sites for mineral collection areas during the development of a reclamation plan.

Related Plan Content for Mining and Minerals

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Partnerships (PART)

Successful implementation of the forest plan will require the development of collaborative partnerships with federal, state, and local governments, federally recognized tribes and pueblos, non-profit organizations, private landowners, and the public. Collaborative partnerships may include identifying, planning, funding, and implementing projects and activities together with others. Partnership opportunities begin with building strong relationships. Partnerships with rural historic communities, land grant-merced and acequia governing bodies, and federally recognized tribes will improve trust and contribute to projects that best provide for cultural, social, and economic needs. Partnerships with other government entities and nonprofit organizations will increase the forests ability to do quality restoration work and to develop and provide improved recreation opportunities.

The Forest Service does not expect to have the personnel or funding resources to successfully execute the many projects desired by the public and communities who use the forest. Partnering with others across forest boundaries creates a dynamic of shared work, assets, and ideas, and will lead to ecological, social, and cultural projects that benefit the greater forest community.

Partnerships Desired Conditions (FW-PART-DC)

1 Community participation and collaboration build long lasting partnerships and relationships to move together toward sustainable ecological, social, cultural, and economic conditions across boundaries.

2 Collaborative efforts help guide development of forest priorities, promote a connection to place, and foster a sense of stewardship.

3 Volunteer and partnership opportunities continue to expand over time, but remain within the forest's capacity to be involved.

4 The Carson NF has a network of dependable partners and volunteers who provide additional capacity to effectively and efficiently meet plan desired conditions, deliver information and services to the public, and provide expertise and capacity to undertake monitoring activities beyond the ability of the Carson NF to achieve on its own. The forest and partners have an expressed mutual interest in, benefit from, and understanding of a common purpose that achieves their respective missions. Partnerships and/or collaborative processes help accomplish projects in the shared interest.

5 Partnership arrangements are transparent to the public and free from real or apparent conflicts of interest or the endorsement of commercial products, services, or entities.

Management Approaches for Partnerships

Management approaches related to partnerships are integrated throughout this plan in other sections.

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Chapter 3. Plan Components for Designated Areas and Management Areas

Throughout this chapter, plan components (plan decisions) are displayed within text boxes. Text outside of boxes does not constitute plan decisions. It is background material, explanations, or descriptions of management approaches.

Designated Areas (DA)

The Carson NF has areas that contain special, exceptional, or unique values that provide important ecosystem services. Many of these areas meet the criteria to be considered special places and are awarded specially designated status. Designation protects the special values of the area and the ecosystem services those values provide. This status can be on a national, regional, or local scale. The term "designated area" refers to categories of area or feature established by, or pursuant to, statute, regulation, or policy. Designation of areas requires approval at upper levels of administration, including Congress, and in some cases requires multiple administrators. Once established, the designation continues until a subsequent decision by the appropriate authority removes the designation. The Carson NF has several of designated areas. Management direction for each type of designated area are in the sections that follow.

Vallecitos Federal Sustained Yield Unit (VFSYU)

The Sustained Yield Forest Management Act of 1944 authorized the Secretary of Agriculture to create federal sustained yield units. In 1946, Northern New Mexico was facing issues of community poverty, overgrazing, and new demands for timber off of National Forest System (NFS) lands. To address these issues and mitigating the effects of recent grazing reductions in the Vallecitos area, the Forest Service created the Vallecitos Federal Sustained Yield Unit (VFSYU) (Figure 6) in 1948, allocating 73,400 acres of NFS lands towards sustained yield management. The primary purpose of the VFSYU and the initial Policy Statement created upon inception was to "provide the maximum feasible, permanent support to the Vallecitos community and nearby areas, including Petaca and Cañon Plaza, from forest products industries obtaining a timber supply from the national forest lands of the Unit".

Currently, there is no operable sawmill nearby to manage the VFSYU as originally intended. The Carson NF continues to plan and implement thinning and fuels reduction projects in the VFSYU. Many of these projects are carried out for the purpose of decreasing fire hazard and maintaining the health of the forested ecosystems in the VFSYU. The additional purpose and benefit of many of these projects is to make fuelwood accessible and available for the surrounding communities. More recently, there has been small-scale thinning activity in the VFSYU, due to approved operators obtaining grant monies from the Collaborative Forest Restoration Project (CFRP) program. These projects have been the only activity with respect to forest management in the VFSYU over the past 10 years. The projects have thinned acres and provided fuelwood to local communities at a small scale.

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Vallecitos Federal Sustained Yield Unit Desired Conditions (DA-VFSYU-DC)

1	The VFSYU provides the maximum feasible and continuous support to the Vallecitos community and nearby areas with forest products.
2	Timber products are available from the VFSYU to support a sawtimber industry that maintains steady employment opportunities for a local resident workforce and provide the ability to obtain lumber for local community needs.
3	Local residents have opportunities for harvesting forest products within the VFSYU, to establish a wood products business.
4	Local communities have opportunities to obtain forest products from the VFSYU for their requirements.
5	Vegetation within the VFSYU is consistent with desired conditions for Mixed Conifer with Aspen (MCW), Mixed Conifer with Frequent-fire (MSD), and Ponderosa Pine Forest (PPF).

Vallecitos Federal Sustained Yield Unit Guidelines (DA-VFSYU-G)

1	The VSFYU should be managed according to the most recent Policy Statement.

Related Plan Content for Vallecitos Federal Sustained Yield Unit

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Wilderness (WILD)

In 1964, Congress acknowledged the immediate and lasting benefits of wild places, by passing landmark legislation that permanently protected some of the most natural and undisturbed places in America. The Wilderness Act established the National Wilderness Preservation System ". . . to secure for the American people of present and future generations the benefits of an enduring resource of wilderness." The Carson NF manages six wilderness areas (Figure 7), comprising around 110,662 acres or 7.5% of the forest. Four of these are completely managed by the Carson NF and the other two have shared management with the Santa Fe NF.

Wheeler Peak Wilderness Area

The Wheeler Peak Wilderness Area was designated by Congress in 1964. It is located in the Sangre de Cristo Mountains, the southernmost reach of the Rockies and spans 18,457 acres. Wheeler Peak, the highest point in New Mexico, is the highlight of this area rising to 13,161 feet above sea level. This feature attracts many visitors, making the Wheeler Peak Wilderness the most heavily used within the Carson NF.

Many of the high peaks and ridges in this area are covered by alpine tundra, rare in the American Southwest. Rocky Mountain big horn sheep are abundant year-round in this habitat type and may exhibit habituation to human presence, allowing visitors to gain a close look at these unique animals. The Wheeler Peak Wilderness is also home to elk, mule deer, golden eagles, marmots, martens, pikas, mountain lions, and black bears. Perhaps the most unusual resident of this area is the white-tailed ptarmigan found in the alpine tundra. Approximately 40 inches of precipitation fall in the Wheeler Peak Wilderness annually, making the winter months ideal for backcountry and cross-country skiing, as well as snowshoeing.

The Wheeler Peak Wilderness Area is the most heavily used wilderness area on the forest. Aside from having the tallest peak in New Mexico, it also has easy access that is paved up to its trailheads. There are limited opportunities for solitude in this wilderness area, given its high level of use where recreational parties generally run 15 persons or more.

The boundary for the Wheeler Peak Wilderness Area was modified for mountain bike use in 2014 under the same legislation designating the Columbine-Hondo Wilderness Area, which did not result in a net loss of acres. The Wheeler Peak Wilderness Area has a "Limits of Acceptable Change" document guiding management of the area.

Pecos Wilderness Area

The Pecos Wilderness was also designated by Congress in 1964. Jointly managed with the Santa Fe NF, the Pecos Wilderness spans a total of 250,020 acres in the Sangre de Cristo Mountains, southeast of Peñasco and north of Santa Fe. The Carson NF administers about 25,000 acres north of the Santa Barbara Divide Trail, which is the least visited portion of the wilderness. Currently, the northern portion of the Pecos Wilderness is the largest wilderness area managed by the Carson NF.

Elevations in the Pecos Wilderness range from 8,000 to 12,835 feet, atop Jicarita Peak. South Truchas Peak (13,103 feet), the second highest point in New Mexico, is located just south of the Santa Barbara Divide, on the Santa Fe NF side of the Pecos Wilderness. Stands of spruce, fir,

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pine, and aspen are interspersed with canyons, mesas, rugged peaks and ridges, clear streams, meadows, and multiple lakes. The topography and scenery of this wilderness area are diverse, creating a myriad of opportunities for recreation and habitat for elk, mule deer, black bear, turkey, and Rocky Mountain big horn sheep.

On the Carson NF portion of this wilderness area, the Santa Barbara access is the most popular, along the Middle Fork Trail. The first 3 to 4 miles of this trail is characterized by high use and is popular for larger groups, such as school groups. After the first 3 to 4 miles; however, use drops dramatically. Portions of the Pecos Wilderness Area on the Carson NF are known for their steep and rugged terrain. This serves to funnel use along streams and trails, where the terrain is gentler. Equestrian use is popular on the Carson NF's side of the Pecos Wilderness Area, and many people begin from the Santa Fe NF's southern end and exit north from the Carson NF's side, or vice versa.

Latir Wilderness Area

The Latir Peak Wilderness was designated by Congress in 1980 and spans a total of 20,405 acres north of Questa, New Mexico. This remote area contains deep forest cover interrupted by meadows and streams, with alpine tundra and alpine lakes found at higher elevations. Cabresto Lake is the most popular access point. From the lake, the Lake Fork Trail follows Cabresto Creek north to Heart Lake, Baldy Mountain, and Latir Mesa, which are all within the wilderness.

The Latir Wilderness Area's primary access is through the Cabresto Lake area. One feature that stands out is an historic cabin characterizing the history of the area. This wilderness area has many trails, but use is comparatively low with respect to the other wilderness areas on the forest, thus providing more opportunities for solitude.

Cruces Basin Wilderness Area

The Cruces Basin Wilderness was also designated by Congress in 1980. This is the smallest wilderness on the Carson NF, spanning 18,867 acres, just south of the New Mexico-Colorado border (Appendix A). It is located northwest of Tres Piedras, in the southern San Juan Mountains. Lack of designated trails and difficult access contribute to the pristine nature of this wilderness, and provide excellent opportunities for solitude. All trails in this wilderness are either fisherman-created or game trails, with just one well-established route entering the wilderness from Osha Canyon, on the southern border.

Mountain plateau surrounds and forms the boundary between the Cruces Basin and Brazos area, adjoining to the west and southwest. Elevations range from 8,600 to 10,900 feet, featuring spruce, fir and aspen forests, interspersed with grassy meadows and prominent rock features. The lush meadows found throughout the basin provide important summer range for elk. Mountain lions, black bear, and many other birds and mammals can be seen as well. Diablo and Beaver creeks, located in the southern portion of the basin, are popular with fly fisherman, due to their abundance of brook trout.

The Cruces Basin Wilderness Area is the least visited wilderness area on the Carson NF. It is also the most difficult to access, along 15 miles of dirt road that receives little maintenance. Unlike all of other wilderness areas on the forest, Cruces Basin is situated in a bowl and rather than along and around mountainous peaks. It also has no designated trails.

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Chama River Canyon Wilderness Area

The Chama River Canyon Wilderness Area was also designated by Congress in 1978 and encompasses 50,300 acres, with only 2,949 acres on the Carson NF. It is managed entirely by the Santa Fe NF. The Wild and Scenic Rio Chama, managed by USDI Bureau of Land Management, is popular among river rafters and canoeists and runs through six miles of the wilderness area. Trail access is poor above the colorful sandstone bluffs and impressive rock formations that rise to high rims on both riverbanks.

Varying canyon elevations also provide a wide range of vegetation, from low-lying piñon-juniper woodland to ponderosa pine and fir. Trout often flourish in the river, and onshore residents include mule deer, black bears, elk, coyotes, and mountain lions. Between 70 and 80 different bird varieties are found in the Chama River Canyon.

The small portion of the Chama River Canyon Wilderness Area that is located on the Carson NF is difficult to access along poorly maintained dirt roads and there is little opportunity off of the rim of the canyon where the Carson NF's portion is found. There is one trailhead on the Carson NF, however the trail is in poor condition and is not maintained.

Columbine-Hondo Wilderness Area

Designated by Congress in December 2014, the Columbine-Hondo Wilderness is the newest addition to the wilderness system on the Carson NF. Before its designation, Columbine-Hondo was a wilderness study area since 1980 and encompassed 43,706 acres. These acres will change when the area is surveyed using the legal description outlined in the Columbine-Hondo Wilderness Act (Public Law 113-291). The Columbine-Hondo Wilderness Area is adjacent to the Wheeler Peak Wilderness Area in the Sangre de Cristo Mountains. Elevation ranges from 7,600 to 12,700 feet. There is an extensive and popular trail system that accesses the area from various points along NM 150 in Hondo Canyon, as well as other plentiful recreation opportunities, including viewing scenery, wildlife watching, picnicking, camping, and hunting. There are several scenic landmarks, including Gold Hill, Lobo Peak, and Flag Mountain. Elk, deer, bear, coyote, and birds of prey can be found within the area, and beavers have produced small ponds on many of the streams. Wildflowers bloom throughout the spring and summer and a variety of berries, mushrooms, and herbs can be gathered seasonally along the drainages.

The Columbine-Hondo Wilderness Area shares many similarities with the Wheeler Peak Wilderness Area. Both are located adjacent to each other, receive high levels of use, offer easy access to wilderness opportunities, and have a high number of trails popular for day hikes. Like Wheeler Peak, the area is also popular for larger group sizes of 15 people or more, and the occasional school group will visit the wilderness area as well.

Since this is a newly designated wilderness area, the forest is beginning to conduct inventories and address management of its use. Signage will be assessed, along with new information released about the newly added wilderness area. When the Columbine-Hondo was designated as a wilderness, there was a boundary modification with Wheeler Peak Wilderness Area, to allow mountain biking within previously used areas that would have otherwise become wilderness. Despite this modification, illegal mountain bike use remains a management challenge that is expected to increase into the future as the activity continues to grow in popularity.

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Wilderness Desired Conditions (DA-WILD-DC)

1 Wilderness is valued by the public and contributes to clean air and water, wildlife habitat enhancement, primitive recreation opportunities, other cultural ecosystem services, and other wilderness characteristics.

2 Natural processes (e.g., insects, disease, blowdown, and fire) are maintained and function in their natural ecological role. Wilderness areas have minimal to no nonnative invasive species.

3 The environment within a wilderness area is essentially unmodified. Naturally occurring scenery dominates the landscape. Manmade features are rare and use natural or complimentary materials. They are present when needed to provide for public safety or resource protection.

4 Wilderness provides recreation opportunities where social encounters are infrequent and occur only with individuals or small groups so that there are opportunities for solitude. Visitors experience self-reliance, challenge, and risk while enjoying opportunities to pursue non-motorized or mechanized activities.

Wilderness Standards (DA-WILD-S)

1 In designated wilderness, no more than 15 persons and 15 livestock are permitted within a single group, unless otherwise noted in a wilderness management plan. Exceptions include special use permits, formal agreements, emergency services, and management activities for maintaining wilderness character.

2 Outfitter-guide activities in wilderness shall include appropriate wilderness practices, such as Leave No Trace principles, and incorporate awareness for wilderness values in their interaction with clients and others.

3 Research conducted in wilderness shall not have adverse effects to wilderness character.

4 Non-native invasive species shall be treated using methods and in a manner consistent with wilderness character in order to allow natural processes to predominate in designated wilderness.

Wilderness Guidelines (DA-WILD-G)

1 Intervention in natural processes through management actions should only occur when this would move the area towards desired conditions, preserve wilderness character, protect public health and safety within and adjacent to wilderness, or uphold other federal laws and regulations.

2 Management activities should be consistent with the scenic integrity objective of “Very High” in designated wilderness, to maintain wilderness character.

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3	A Minimum Requirements Analysis should be utilized when considering new activities and instances authorizing non-conforming uses.

Management Approaches for Wilderness

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1. Consider clearly identifying wilderness boundaries through signage at official entry points and needed locations (e.g., informal access points) that is consistent with trail maps, and boundary markers.
2. Consider working with local partners to maintain wilderness, including trail maintenance and construction.
3. Consider partnering with other federal agencies to ensure management is as consistent as possible for contiguous wilderness areas.
4. Consider helicopter use in wilderness areas to manage fish or wildlife populations when deemed appropriate by minimum requirements analysis. Approval of helicopter use is made by the Regional Forester, after appropriate NEPA analysis.
5. Consider using the most recent version of a wilderness area's respective management plan, if it exists.

Related Plan Content for Wilderness

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Wild and Scenic Rivers (WSR)

In 1968, Congress passed the Wild and Scenic Rivers Act to preserve the beauty and free-flowing nature of some of the most precious waterways in America. To be designated, rivers or sections of rivers must be free-flowing and possess at least one "outstandingly remarkable" value, such as scenic, recreational, geologic, fish, wildlife, historic, cultural, or other features identified under the Act.

The Carson NF includes two river sections designated wild and scenic rivers (Figure 7); however, both are managed by the BLM, as part of the Rio Grande Wild and Scenic River. One Carson NF segment is approximately 5 miles of the Rio Grande, along the west boundary of the Questa RD. The other forest segment is the lower 3.25 miles of the Red River, where it meets the Rio Grande. These sections were among the original eight rivers to be designated as National Wild and Scenic River Systems by Congress in 1968. Both sections of river are classified as “Wild”, and flow through deep gorges and offer spectacular views anywhere along the gorge rim. The Red River section is within BLM’s Wild Rivers Recreation Area. One hiking trail leads down into the gorge from the recreation area and another from Cebolla Mesa on the Questa RD.

Wild and Scenic Rivers Desired Conditions (DA-WSR-DC)

1	The outstandingly remarkable values, free-flowing condition, and classifications of wild and scenic river corridors are preserved.

Wild and Scenic Rivers Standards (DA-WSR-S)

1	Designated wild and scenic rivers shall be managed to protect or enhance their free flowing condition. Proposed water resources projects, including activities within the bed and banks and below the ordinary high water mark of the river, shall require a free flow analysis.
2	Designated wild and scenic rivers shall be managed to protect or enhance existing outstandingly remarkable values.
3	Management of the Rio Grande Wild and Scenic River shall comply with BLM’s river management plan.

Related Plan Content for Wild and Scenic Rivers

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Inventoried Roadless Areas (IRA)

Inventoried roadless areas (IRAs) provide clean drinking water and function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes with high scenic quality that are important to biological diversity and the long-term survival of many at risk species. Inventoried roadless areas provide opportunities for dispersed outdoor recreation. They also serve as buffers against the spread of non-native invasive plant species and serve as reference areas for study and research. The Carson NF manages 12 IRAs, totaling around 105,000 acres (Figure 8).[1]

Table 3. Inventoried roadless areas on the Carson National Forest

Inventoried Roadless Area	Size (acres)	Ranger District
Bull Canyon	11,512	Canjilon
Canjilon Mountain	7,971	Canjilon
Osier Mesa	2,840	Tres Piedras
Comales Canyon	4,388	Camino Real
Pecos	13,434	Camino Real
Sierra Negra	9,469	El Rito
Cruces Basin	5,243	Tres Piedras
Latir Peak	3,572	Questa
Columbine-Hondo Wilderness Area	43,738	Questa
Bull-of-the-Woods	487	Questa
Wheeler Peak Wilderness	2,677	Questa

The Chief of the Forest Service reviews all projects involving road construction or reconstruction and the cutting, sale, or removal of timber in IRAs, with the exception of the following management activities, which are reviewed by the Regional Forester:

- Any necessary timber cutting or removal or any road construction or road reconstruction in emergency situations involving wildfire suppression, search and rescue operations, or other imminent threats to public health and safety in IRAs.
- Timber cutting, sale, or removal in IRAs incidental to the implementation of an existing special use authorization. Road construction or road reconstruction is not authorized through this re-delegation without further project specific review.

[1] The Carson NF's IRAs are managed according to the 2001 Roadless Area Conservation Rule (Roadless Rule - 36 CFR 294).

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- The cutting, sale, or removal of generally small diameter timber when needed for one of the following purposes:
    - To improve threatened, endangered, proposed, or sensitive species habitat;
    - To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects within the range of variability, that would be expected to occur under natural disturbance regimes of the current climatic period; or,
    - For the administrative and personal use, as provided for in 36 CFR 223, where personal use includes activities, such as Christmas tree and fuelwood cutting, and where administrative use includes providing materials for activities, such as construction of trails, footbridges, and fences.

Inventoried Roadless Areas Desired Conditions (DA-IRA-DC)

1	Inventoried roadless areas (IRAs) encompass large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of at-risk species. They serve as safeguards against the spread of invasive plant species and provide reference areas for study and research.
2	IRAs appear natural, have high scenic quality, and provide opportunities for dispersed recreation.

Inventoried Roadless Areas Standards (DA-IRA-S)

1	A road shall not be constructed or reconstructed in an IRA, unless the responsible official determines that a road is needed according to the circumstances allowed in the Roadless Rule, 36 CFR § 294.12. Review authorities shall be followed.
2	Timber shall not be cut, sold, or removed in IRAs, unless the responsible official determines that activities meet the circumstances provided in the Roadless Rule, 36 § 294.13. Review authorities shall be followed.

Inventoried Roadless Areas Guidelines (DA-IRA-G)

1	Management activities in an IRA should maintain or improve its roadless characteristics.
2	IRAs should be managed for Primitive, Semi-Primitive Non-Motorized, and Semi-Primitive Motorized recreation opportunity settings (ROS), to preserve their roadless characteristics.
3	Management activities should be consistent with the scenic integrity objective of High, to preserve their roadless characteristics.

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Related Plan Content for Inventoried Roadless Areas

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National Scenic, Historic, and Recreation Trails (NTRL)

Congress passed the National Trails System Act in 1968. The Act authorized creation of a national trail system comprised of national scenic trails, national historic trails[1], and national recreation trails. The Carson NF administers all three types of nationally designated trails (Figure 9).

Continental Divide National Scenic Trail

The Continental Divide National Scenic Trail (CDNST) traverses the Rocky Mountains from Canada to Mexico for approximately 3,100 miles (USDA FS 2015b). It travels through portions of 25 national forests, 3 national parks, 4 BLM districts, as well as various private lands in Montana, Idaho, Wyoming, Colorado, and New Mexico. It was established by Congress in 1978 to provide high-quality scenic, primitive hiking, and horseback riding opportunities, and to conserve natural, historic, and cultural resources along the CDNST corridor. These uses persist today and are now joined by a growing diversity of users, including mountain bikers, cross-country skiers, and long-distance runners. The CDNST navigates dramatically diverse ecosystems through mountain meadows, granite peaks, and high-desert surroundings. It is one of the most renowned trails in the United States, for its scenic beauty, recreational opportunities, elevation gains, and primitive character. The Carson NF has completed 69.8 miles and surveyed 35 miles of the CDNST.

Old Spanish National Historic Trail

The Old Spanish National Historic Trail was designated by Congress in 2002. The trail traverses six states (Arizona, California, Colorado, Nevada, New Mexico, and Utah) and was primarily a horse and burro pack route between Santa Fe and Los Angeles, which developed partly from a network of American Indian and Hispanic trade routes in the 1800s (NPS Website). The entire trail (with various loops) transverses 2,700 miles, with 49.6 of those miles on the Carson NF.

Columbine-Twining National Recreation Trail

The Columbine-Twining National Recreation Trail was designated in 1978. It is a difficult trail with the length of 14.2 miles and an elevation gain of 1,500 feet, from 7,900 to 9,400 feet, through Columbine Canyon to the ridge of Rio Hondo Canyon The trail offers hiking through aspens to exceptional views of Lobo Peak and Flag Mountain above tree line.

The first couple of miles of the Columbine-Twining National Recreation Trail receive heavy use on either end, especially by day hikers. The trail is also easily accessible through campgrounds at either end of the trail, the Columbine Campground on the north and the Twining Campground on the south, making it popular among the campers. The trail is in good condition, but it can be difficult to follow along the ridgeline. It has also had four footbridges removed from the sections of the trail that go into the Wheeler Peak Wilderness Area. While only two bridges have been replaced, access is unimpaired.

[1] While a portion of El Camino Real de Tierra Adentro is known locally to traverse the Carson NF, it was decided not to be nationally designated.

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South Boundary National Recreation Trail

Designated in 1982, the South Boundary National Recreation Trail is 22 miles long and offers various summer and winter trail opportunities from Taos to Angel Fire, New Mexico. The South Boundary Trail is a diverse tour of the Sangre de Cristo Mountains, crossing ridges, valleys, and several peaks, through dense conifer forests and open stands of aspen. The trail is at its very best in the fall, when aspens along the route turn shades of yellow, gold, and fiery orange. Besides being a wonderfully scenic tour of New Mexico's Rocky Mountains, this is also one of the state's best mountain bike rides.

The South Boundary Trail is one of the most popular and heavily used trails on the forest for several reasons. It offers backpacking opportunities, as well as day trips, without having to go to higher elevations, and it is in close proximity to Taos and Angel Fire. It is also one of the premiere mountain biking trails in New Mexico. Mountain bikers travel from many parts of the country to ride this trail. The trail is also long enough to accommodate overnight mountain biking, an increasingly popular form of mountain biking.

Jicarita Peak National Recreation Trail

The Jicarita Peak National Recreation Trail was designated in 1979. It offers a challenging experience in the Pecos Wilderness and spectacular views from atop Jicarita Peak (12,835 feet), looking off to the west across the Rio Grande Valley and north to the Rocky Mountains in Colorado. Fall aspens are especially prominent along this route. Elk, marmot, ptarmigan, deer, and black bear are some of the wildlife to be found in the area. The trail is 23 miles long and starts at 8,860 feet and ends at 12,835 feet in elevation.

The stretch of the Jicarita Peak Trail between the Serpent Lake Trailhead and Jicarita Peak receives moderate use. After reaching the peak however the trail gets very little use. This is because there are a number of Forest Service trails in the area that are more popular. The other popular access point to Jicarita Peak is via the Santa Barbara Trail, from the Santa Barbara Campground on the northern end of Pecos Wilderness Area.

National Scenic, Historic, and Recreation Trails Desired Conditions (DA-NTRL-DC)

Continental Divide National Scenic Trail (CDNST)

1 The CDNST provides high-quality scenic, primitive hiking, mountain biking, pack and saddle stock opportunities to conserve natural, historic, and cultural resources along the trail. Other activities and opportunities are allowed, when compatible with the nature and purposes of the CDNST.

2 Viewsheds from the CDNST have "high" scenic values. The foreground of the trail (up to 0.5 mile on either side) is natural-appearing, and generally looks unaltered by human activities.

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3 The CDNST is consistent with a Primitive or Semi-Primitive Non-Motorized setting and may intermittently pass through more developed settings. The CDNST provides for a continuous route through predominately undeveloped settings.

4 Visitors are aware of the CDNST and the nature and purpose of the trail designation.

5 Conflicts among recreation users are rare.

6 The CDNST has access points that provide various opportunities to select the type of terrain, scenery, and trail length (e.g., ranging from long-distance to day use) that best provide for compatible outdoor recreation experiences.

7 Wild and remote backcountry segments of the CDNST provides opportunities for solitude immersion in natural landscapes and primitive outdoor recreation; while easily accessible trail segments complement local community interests and needs.

Other National Scenic, Historic, and Recreation Trails

8 The national scenic, historic, and recreation trails on the forest and the nature and purposes of the trail designation are protected.

9 Conflicts among recreation users are rare.

10 Designated national scenic and recreation trails are well maintained, signed, and passable.

11 Views in the immediate foreground (0 to 300 feet) of national scenic and recreation trails include natural-appearing landscapes. The landscapes have high scenic values and generally appear unaltered by human activities.

12 National scenic, historic, and recreation trails provide a nonmotorized trail opportunity, where visitors can experience the scenic qualities of the area.

National Scenic, Historic, and Recreation Trails Standards (DA-NTRL-S)

Continental Divide National Scenic Trail (CDNST)

1 Management of the CDNST shall comply with the most recent version of the CDNST Comprehensive Plan. Best available science can be used in lieu of the Comprehensive Plan if plan is more than 15 years old.

2 No surface occupancy for geothermal energy leasing activities shall occur within 0.5 mile either side of the CDNST.

3 No common variety mineral (e.g., limestone, gravel, pumice, sandstone) extraction shall occur within 0.5 mile either side of the CDNST.

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4 Motorized events and motorized special use permits shall not be permitted or authorized on the CDNST.

National Scenic, Historic, and Recreation Trails Guidelines (DA-NTRL-G)

Continental Divide National Scenic Trail (CDNST)

1 To retain or promote the character for which the CDNST was designated, new or relocated trail segments should be located primarily within settings consistent with or complementing Primitive or Semi-Primitive Non-Motorized Recreation Opportunity Spectrum classes. Road and motorized trail crossings and other signs of modern development should be avoided.

2 To protect or enhance the scenic qualities of the CDNST, management activities should be consistent with or make progress toward achieving, Scenic Integrity Objectives of High or Very High within the visible foreground of the trail.

3 If management activities result in short-term impacts to the scenic character along the CDNST, mitigation measures should be included (e.g., screening, feathering, and other scenery management techniques), to minimize visual impacts at key points (e.g., vistas), within 0.5 mile either side of the trail.

4 In order to promote a non-motorized setting, the CDNST should not be permanently re-located onto routes open to motor vehicle use.

5 Linear utilities and rights-of-way should be limited to a single crossing per special use authorization of the CDNST unless additional crossings are documented as the only prudent and feasible alternative.

6 New temporary and permanent road or motorized trail construction across or adjacent to the CDNST should be avoided unless necessary for resource protection, access to private lands, or to protect public health and safety.

7 Using the CDNST for landings or as a temporary road should not be allowed. Hauling or skidding along the CDNST itself should be allowed only when design criteria are used to minimize impacts to the trail infrastructure and where the CDNST is currently located on an open road and no other haul route or skid trail options are available.

8 Unplanned fires in the foreground (up to 0.5 mile) of the CDNST should be managed using minimum impact suppression tactics or other tactics appropriate for the protection of CDNST values. Prescribed fires in the foreground of the CDNST should be managed to protect health and safety but also incorporate the values of the CDNST. Heavy equipment fireline construction up to 0.5 mile of either side should not be allowed unless necessary for emergency protection of life and property.

9 The minimum trail facilities necessary to accommodate the amount and types of use anticipated on any given segment should be provided in order to protect resource values

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and for health and safety (not for the purpose of promoting user comfort) in order to preserve or promote a naturally appearing setting.

Other National Scenic, Historic, and Recreation Trails

1 National recreation trails should be managed for nonmotorized and mechanized travel to enhance visitor experience, however there are portions of the South Boundary Trail where the trail coincides with a designated road.

2 National historic trail segments on the forest should follow a route of historic significance as closely as possible, to protect the route and its artifacts for public use and enjoyment.

Management Approaches for National Scenic, Historic, and Recreation Trails

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. To protect the CDNST's scenic values, consider special-use authorizations for new communication sites, utility corridors, and renewable energy sites that would not be visually apparent within visible foreground (up to 0.5 mile) and middleground viewshed (up to four miles).
2. Consider coordinating trail management and activities across unit and jurisdictional boundaries, specifically with the Santa Fe and Rio Grande national forests and the Bureau of Land Management.

Related Plan Content for National Scenic, Historic, and Recreation Trails

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National Scenic Byways (NSBW)

A national scenic byway is a road recognized by the United States Department of Transportation for one or more of six "intrinsic qualities": archeological, cultural, historic, natural, recreational, and scenic. The program was established by Congress in 1991 to preserve and protect the nation's scenic but often less-traveled roads and promote tourism and economic development. The Forest Service's Scenic Byways Program is intended to enhance rural community tourism and provide amazing opportunities to explore the beauty, history and natural heritage of the national forests. This is especially true of the Enchanted Circle National Scenic Byway, an 84-mile loop of scenic driving from Taos, through Questa, Red River, Angel Fire and back to Taos again (Figure 9). It is currently the only Forest Service scenic byway that travels through the Carson NF.

The Enchanted Circle National Scenic Byway has outstanding scenery, offers various recreation opportunities, and showcases the unique cultural history of Northern New Mexico. It receives heavy year-round use by tourists and local commuters alike, who travel by motor vehicle, motorcycle, and bicycle. All the communities along the "Enchanted Circle" benefit economically from the visitation this scenic byway generates, and most of the draw is from the scenic and recreational opportunities found on the Carson NF. The Town of Taos, Village of Taos Ski Valley, Village of Questa, Town of Red River, Village of Eagle Nest, and Angel Fire Convention and Visitor's Bureau have partnered to plan ways to add or improve recreational opportunities along the byway, as well as making it an extended stay location. The Carson NF has been engaged in these discussions and looks to more partnership opportunities in the future.

National Scenic Byways Desired Conditions (DA-NSBW-DC)

1	Viewsheds along national scenic byway(s) provide natural appearing landscapes and enhance recreation tourism that supports local communities.
2	The intrinsic qualities identified for national scenic byway(s) remain intact.
3	National scenic byway(s) exhibit natural appearing landscapes, where human activities do not stand out in the foreground, up to one-half mile (high scenic integrity).
4	National scenic byway(s) provide roaded-natural recreation opportunities.

Related Plan Content for National Scenic Byways

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Wild Horse Territories (WHT)

The Carson NF has four designated wild horse territories. Jarita Mesa Wild Horse Territory and Jicarilla Wild Horse Territory are the only two that are occupied and managed. The Wild Free-Roaming Horses and Burros Act of 1971, as amended by the Federal Land Policy and Management Act of 1976 and the Public Rangeland Improvement Act of 1978, directs the protection and management of wild horses and burros on public lands. The Forest Service, by authority of the Secretary of Agriculture, is responsible for managing the nation's wild horses and burros on NFS lands. Management of wild horse and burro territories is guided by individual management plans.

Jarita Mesa Wild Horse Territory comprises 54,886 acres on the El Rito Ranger District (Figure 10). The history of this herd is tied to the local Hispanic communities that have been present in the area for some 300 years. The foundation blood for the horses is Spanish mustang, but genetic testing and physical appearance indicate other bloodlines may have influenced the herd as well.

Jicarilla Wild Horse Territory comprises 75,986 acres of the Jicarilla Ranger District (Figure 10). The history of this herd is vague, but appears to be based on cavalry stock and ranch horses from the area, along with an influx of horses from the adjacent Jicarilla Apache Reservation. Genetic testing has indicated a mixed breeding background.

Wild Horse Territory Desired Conditions (DA-WHT-DC)

1	A biologically sound and genetically viable horse population is supported by healthy ecosystems, essential ecological processes, and land stewardship activities, and reflect the diversity, quantity, quality, and capability of natural habitats on the forest.
2	Rangelands are resilient to disturbances, fluctuations, and extremes in the natural environment.
3	Forage, browse, and cover needs of wild horses, wildlife, and authorized livestock are available and are at or moving towards a healthy, persistent state relative to site potential.

Wild Horse Territory Standards (DA-WHT-S)

1	Humane methods will be utilized to gather animals, when it has been determined acceptable management levels have been exceeded.

Wild Horse Territory Guidelines (DA-WHT-G)

1	Horse numbers within a territory should be aligned with the appropriate management level as described in wild horse territory management plans.
2	Population control measures on wild horses should be implemented to maintain genetic diversity and desired resource conditions in the area.

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Management Approaches for Wild Horse Territories

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1. Consider coordinating management of the Carson NF's wild horse program with the BLM, to benefit both agencies.
2. Consider partnering and coordinating with wild horse advocates, federally recognized tribes, adjacent land owners, and grazing permit holders to maintain the desired appropriate management level (AML) of wild horses through actions, such as capture and removal and fertility control treatments.

Related Plan Content for Wild Horse Territories

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Sangre de Cristo Pea Clam Zoological Area (ZOO)

A zoological area is a designated area that contains animal specimens, animal groups, or animal communities that are significant because of their occurrence, habitat, location, life history, ecology, rarity, or other features (FSM 2372.05 (4)). The Sangre de Cristo Pea Clam Zoological Area is the only zoological area on the Carson NF. The Sangre de Cristo pea clam is on the State's Group 1 Endangered List and only known to occur in the Middle Fork Lake on the Questa RD; however, this pea clam has not been determined as a valid separate species at this time. The lake, its shoreline, and immediate surrounding drainage are within the designated area as protected habitat for the pea clam.

The Sangre de Cristo Pea Clam Zoological Area is located on the Questa RD (Figure 10). This watershed is functioning at risk, meaning it exhibits moderate geomorphic, hydrologic, and biotic integrity, relative to its natural potential condition. In terms of ecological integrity, provided the pea clam is a valid species, this is the only location within the State of New Mexico where it is found.

Sangre de Cristo Pea Clam Zoological Area Desired Conditions (DA-ZOO-DC)

1	See Watersheds and Water (FW-WSW-DC)
2	See Waterbodies (FW-WSW-WB-DC)

Sangre de Cristo Pea Clam Zoological Area Standards (DA-ZOO-S)

1	Management activities, including vehicle use, shall not cause pollution or change in water chemistry of Middle Fork Lake.

Related Plan Content for Sangre de Cristo Pea Clam Zoological Area

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Haplopappus Microcephalus Botanical Area (BOT)

A botanical area is a designated area that contains plant specimens, plant groups, or plant communities that are significant because of their form, color, occurrence, habitat, location, life history, arrangement, ecology, rarity, or other features (FSM 2372.05(3)). The Haplopappus Microcephalus Botanical Area is the only botanical area designated on the Carson NF (Figure 10). *Haplopappus microcephalus* is a small-headed goldenweed that is a Carson NF species of conservation concern (SCC) and on the State Endangered Plant List. The massive granite outcrops northeast and northwest of Tres Piedras on the Carson NF are the only places within New Mexico where the plant has been located, thus adding to the ecological integrity of the area. The designated area is 60 acres.

Haplopappus Microcephalus Botanical Area Desired Conditions (DA-BOT-DC)

1 See Cliffs and Rocky Features (FW-CRF-DC)

2 See Ponderosa Pine Forest (FW-VEG-PPF-DC)

Haplopappus Microcephalus Botanical Area Guidelines (DA-BOT-G)

1 Rock climbing and related recreation activities should not disrupt the life processes of small-headed goldenweed. Installation of permanent rock climbing hardware should be allowed only by permit, if small-headed goldenweed is being impacted.

2 Where recreation activities have the potential to trample known populations of small-headed goldenweed, signs should be posted educating the public to stay on designated trails.

Related Plan Content for Haplopappus Microcephalus Botanical Area

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Management Areas (MA)

The Carson NF has several areas on the forest that require different management that cannot be met through forest-wide plan components. These areas are identified as management areas. A management area represents a management emphasis for an area or several similar areas on the landscape. Plan components for a management area may differ from forest-wide guidance by:

- Constraining an activity where forest-wide direction does not;
- Constraining an activity to a greater degree than forest-wide direction; or
- Providing for an exception to forest-wide direction, when forest-wide direction is in conflict with the management emphasis of the management area. For example, a forest-wide desired condition in Spruce-Fir Forest (SFF) describes openings to be maintained by natural processes, while a desired condition for the Developed Winter and Summer Resort Management Area (DEVRES) describes resort activities playing a dominant role in maintaining man-made grassy openings intermixed with forested areas.

Forest-wide plan components are applied, unless there is management direction for a management area.

Recommended Wilderness Management Area (RWMA)

The recommended wilderness management Area (RWMA) is comprised of lands recommended for wilderness designation as a result of a 4-step recommended wilderness process: (1) inventory; (2) evaluation; (3) analysis; and (4) recommendation. The purpose of the recommendation process was to identify all areas within the Carson NF not yet designated as wilderness that satisfy the definition of wilderness found in the 1964 Wilderness Act. The intent of this management area is to provide direction that would retain or improve the wilderness values of these areas if and until they are established by Congress. The recommendation is a preliminary administrative recommendation that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. Plan implementation is not dependent upon subsequent action related recommendations for wilderness designation.

Recommended Wilderness MA Desired Conditions (DA-RWMA-DC)

1	Recommended wilderness management areas (RWMAs) are valued by the public and contribute to clean air and water, wildlife habitat enhancement, primitive recreation opportunities, other cultural ecosystem services, as well as their wilderness characteristics.
2	Natural processes (e.g., insects, disease, blowdown, and fire) are maintained and function in their natural ecological role or are mimicked (e.g., prescribed fire, suppression of human caused fire). RWMAs have minimal to no nonnative invasive species.
3	The environment within RWMAs is essentially unmodified. Naturally occurring scenery dominates the landscape. Manmade features are rare and use natural or complimentary

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giving themselves the latitude to create management areas, what is the impact of livestock program

Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 7:58:34 AM

see RITF 83

materials. They are present when needed, to provide for public safety or resource protection.

4 RWMAs provide recreation opportunities, where social encounters are infrequent and occur only with individuals or small groups so that there are opportunities for solitude. Visitors experience self-reliance, challenge, and risk, while enjoying opportunities to pursue non-motorized or mechanized activities.

5 Livestock grazing contributes to the long-term socioeconomic diversity and stability of local communities and cultural identity tied to a RWMA.

Recommended Wilderness MA Standards (DA-RWMA-S)

1 Motorized travel and uses shall not be allowed in a RWMA, unless specifically authorized for emergency use or the limited needs required for management of a grazing allotment.

2 Mechanized recreation shall not be allowed in a RWMA, to protect the wilderness characteristics of the area.

3 No new permanent or temporary roads, motorized trails, or mechanized (e.g., mountain bike, e-bike) trails for public access shall be constructed or designated in a RWMA.

4 Timber harvest for the purpose of timber production is prohibited in a RWMA.

5 The development of existing mining claims within an RWMA shall be subject to valid existing rights.

6 New energy developments or leases shall not be permitted with a RWMA.

7 Sales or extraction of common variety minerals shall not be permitted in a RWMA.

8 Non-native invasive species shall be treated using methods and in a manner consistent with wilderness characteristics, in order to allow natural processes to predominate in a RWMA.

Recommended Wilderness MA Guidelines (DA-RWMA-G)

1 Intervention in natural processes through management actions (e.g., prescribed fire, active weed management) should only occur when this would move the RWMA toward desired conditions, preserve wilderness characteristics, protect public health and safety within and adjacent to the RWMA, or uphold other federal laws and regulations.

2 Unplanned and planned ignitions in RWMAs should be considered, to reduce the risks and consequences of uncharacteristic wildfire, to increase apparent naturalness, or to enhance ecosystem function.

3 To provide for public health and safety and recreational opportunities, mechanized uses for management activities (e.g., chainsaws, wheelbarrows) should be allowed in an RWMA, if they do not permanently degrade wilderness characteristics.

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4	Management activities should be consistent with the scenic integrity objective of "Very High", to maintain wilderness characteristics.
5	Existing structures necessary for administration of the area should be maintained but not expanded, to protect the RWMA's wilderness characteristics. Maintenance of existing structures should be carried out in a manner that does not expand the evidence of motor vehicle and mechanized equipment use beyond current conditions within the RWMA.
6	Competitive events should not be permitted in recommended wilderness areas, to maintain wilderness characteristics of solitude and primitive and unconfined recreation.

Related Plan Content for Recommended Wilderness MA

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Eligible Wild and Scenic River Management Area (EWSR)

Eligible wild and scenic rivers (EWSR) meet the basic criteria for inclusion in the National Wild and Scenic Rivers System. They are free-flowing and possess at least one value that is outstandingly remarkable regionally or nationally. There are three possible classifications of eligible river segments, based on the level of development and human use in the river and along its corridor. Table 4 contains the criteria that must be met under each classification. The Carson NF has 50 river segments totaling approximately 193 miles that have been identified by the agency through this plan as eligible to be included in the National Wild and Scenic Rivers System. There are 89.2 miles classified as wild, 33.9 miles classified as scenic, and 70.2 miles classified as recreational. These rivers are located in all six ranger districts. The list of eligible wild and scenic rivers is in Appendix A.

Table 4. Criteria for Wild, Scenic, and Recreational eligible river classification

Attribute	Wild	Scenic	Recreational
User Experience	Essentially primitive.	Largely primitive and undeveloped.	Substantial evidence of human activity.
Water Resource Development	Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions, or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable.	No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable.	Some development. The presence of extensive residential development and a few commercial structures is acceptable.
Transportation Infrastructure	Generally inaccessible except by trail. No roads, railroads, or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the area are acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality	Meets, or exceeds criteria, or federally approved State	No criteria are prescribed by the Wild and Scenic Rivers Act.	No criteria are prescribed by the Wild and Scenic Rivers Act.

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Attribute	Wild	Scenic	Recreational
	standards for aesthetics, for propagation of fish, and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	See the Watershed section of this plan for water quality plan components that apply to all waters.	See the Watershed section of this plan for water quality plan components that apply to all waters.
Agriculture	1 limited amount of domestic livestock grazing or hay production is acceptable.	The presence of grazing, hay production, or row crops is acceptable.	Lands may have been developed for the full range of agricultural uses.
Timber Production	Little or no evidence of past timber harvest. No ongoing timber harvest.	Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Lands may have been developed for the full range of forestry uses. May show evidence of past and ongoing timber harvest.

Agency-identified eligible rivers are managed to retain their status until a suitability determination has been made whether to recommend them for inclusion in the National Wild and Scenic Rivers System. A suitability study must analyze the effects of designation to other resource values, identify issues, and explore alternatives for protecting river values. The Carson NF may authorize projects and activities in eligible rivers or the surrounding corridor so long as they preserve the free-flowing condition of the river, protect the outstandingly remarkable values that provide the basis of the river's eligibility for inclusion in the system and do not affect the classification of the river segment. In most cases, in-stream structures that unnaturally impound water have a negative impact on free-flow, however some impoundments may be allowed if they are built from natural appearing materials that harmonize with the river environment, mimic natural events (e.g., trees falling across a river), do not cause hazards that interfere with the recreational use of the river, and do not prevent natural river processes in the future. Free-flow may be positively affected when instream structures promote more natural levels of river processes (e.g., bank erosion, channel shifting, groundwater infiltration, floodplain development) and bed load or debris movement. For example, a degraded, incised river may be considered free-flowing, but in some cases that free-flow may be altered in order to restore a more natural flow by slowing water and reconnecting the river with its floodplain.

Eligible Wild and Scenic River Desired Conditions (MA-EWSR-DC)

1 The outstandingly remarkable values and free-flowing condition of eligible segments are preserved.

2 Eligible river segments and their immediate environments are protected for the benefit and enjoyment of present and future generations.

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limited amount of domestic livestock ”a limited amount” undefined and restrictive

3	The user experience in eligible river corridors is consistent with the river's classification.

Eligible Wild and Scenic River Standards (MA-EWSR-S)

1	Any authorized water resources project in an eligible river segment must not adversely modify the river's free-flowing character.[1]
2	Any authorized project or activity within ¼ mile of an eligible river segment must protect the outstandingly remarkable values that provide the basis of the river's eligibility for inclusion in the system.
3	The classification of an eligible river segment shall be maintained as inventoried. Any project or activity within ¼ mile of an eligible river segment must preserve the appropriate user experience according to the river's classification.
4	A suitability study shall be conducted for any proposed project or activity that would conflict with the river's eligibility requirements.
5	Existing or new mining activity on agency-identified eligible river segments must be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment.
6	The sale of common variety mineral material is prohibited within ¼ mile of any wild eligible river segment.
7	Cutting of trees shall not be permitted in wild eligible river segment corridors, except when needed in association with a primitive recreation experience, to protect users, or to protect the outstandingly remarkable values that provide the basis of the river's eligibility for inclusion in the system.
8	New airfields may not be developed within ¼ mile of a wild eligible river segment.

Eligible Wild and Scenic River Guidelines (MA-EWSR-G)

1	New roads or motorized trails should generally not be constructed within ¼ mile of a Wild classified eligible river segment, to preserve the essentially primitive user experience.

[1] Water resources projects include all modifications to the stream channel or banks below the ordinary high water mark of a river. Proposed water resources projects must be analyzed to determine their effects on free flow, specifically whether they alter or restrict the natural function of the river (i.e., bank erosion, channel shifting, bed-load or debris movement). Water resources projects that modify free-flowing character may occur only when they mimic natural river processes, restore more natural river function, and are otherwise consistent with the river's eligibility.

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Related Plan Content for Eligible Wild and Scenic Rivers

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Outstanding National Resource Waters Management Area (ONRW)

Outstanding national resource waters (ONRWs) are streams, lakes and wetlands that receive special protection against degradation under New Mexico's water quality standards and the federal Clean Water Act. They are designated by the Water Quality Control Commission. Waters eligible for ONRW designation include waters that are part of a national or state park, wildlife refuge or wilderness areas, special trout waters, waters with exceptional recreational or ecological significance, and high quality waters that have not been significantly modified by human activities.

Land-use activities in existence at the time an ONRW is designated are not affected, as long as they are allowed by state or federal law, controlled by best management practices (BMPs), and do not result in new or increased discharges of contaminants to the ONRW. Examples of such activities that occur near currently designated ONRWs include recreation and grazing. In addition, acequia operation, maintenance, and repair are not subject to new requirements because of ONRW designation.

The Surface Water Quality Bureau's website identifies the most current list of designated ONRWs on the Carson NF. This ONRW management area brings attention to designated ONRWs on the Carson NF and the State of New Mexico's Antidegradation Policy Implementation Procedures to be applied to these waters. The Forest Service must ensure that its permitting decisions, environmental evaluations, and other actions contain terms, conditions or requirements that comply with New Mexico's water quality standards, including the antidegradation protection that applies to ONRWs on NFS lands. The Forest Service has the authority to approve pre-existing activities and new activities with appropriate BMPs to protect ONRWs from nonpoint source pollution. The Forest Service can also approve and implement watershed restoration and maintenance activities that may result in temporary degradation to an ONRW.

1 Outstanding National Resource Waters Desired Conditions (DA-ONRW-DC)

1	The water quality of Outstanding National Resource Waters designated on the Carson NF is preserved.

Management Approaches for Outstanding National Resource Waters

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider prioritizing road system maintenance to reduce sedimentation in ONRWs.
2. Coordinate with federal, state, and local government agencies, private organizations, and individuals to maintain current agreements and seek to enter into new agreements with other entities.

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how good of a job does USFS do to ensure no decline in water quality

Related Plan Content for Outstanding National Resource Waters

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Developed Winter and Summer Resort Management Area (DEVRES)

The Developed Winter and Summer Resorts (DEVRES) management area (MA) includes the existing four resorts that are currently permitted and developed on the Carson NF. The existing resorts are Taos Ski Valley, Red River Ski and Summer Area, and Enchanted Forest Cross-Country Ski Area, located on the Questa RD, and Sipapu Ski and Summer Resort, which is on the Camino Real RD (Figure 11). Initially developed and managed as ski areas, winter and summer resorts on the Carson NF are now operated by the private sector to provide opportunities for outdoor recreation activities during all seasons of the year. Snow skiing/boarding is still one of the most popular recreation activities on the forest. These resorts provide winter sports activities and other intensively managed outdoor recreation opportunities for large numbers of national and international visitors in highly developed settings. Opportunities for solitude within DEVRES are limited. In some areas, use in the summer may be as intensive as in the winter.

Winter and summer resorts are managed under a special use permit. As a part of the special use permit, each ski area develops master development plan (MDP) that is accepted by the Forest Service. MDPs describe the improvements and facilities that are desired at each resort and are the guiding document used to describe its expected future condition. An MDP encompasses all of the area authorized for use under permit (permit area), including areas that are currently undeveloped.

Developed Winter and Summer Resort MA Desired Conditions (MA-DEVRES-DC)

1 Resort activities play a dominant role in affecting the composition, structure, and pattern of vegetation across most of the management area. Vegetation is a mosaic (e.g., varying widths and shapes) that includes natural and man-made grassy openings intermixed with forested areas, partially forested areas, and rocky outcroppings providing a variety of species and age classes.

2 Forest conditions within DEVRES are conducive to achieving the desired recreational settings and experiences and contribute to the enjoyment of recreationists.

3 Forests within DEVRES have structure, composition, and densities that are resilient to disturbances (e.g., fire, windthrow, insects, and disease.

4 Resort facilities (e.g., buildings, lifts, and groomed trails) may be evident, but blend and harmonize with the forest setting from key viewpoints.

5 Transportation routes within the permit area blend with the surrounding forest.

6 Base area development within DEVRES complements the overall forest setting and serves the needs of forest visitors.

7 Focused and diverse recreational opportunities in specific areas respond to demand. Local communities can easily access these areas for a variety of motorized and non-motorized experiences.

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8	Contacts with Forest Service personnel are common, generally for the purposes of providing information, education, interpretation, and monitoring compliance with the terms and conditions of the special use permit.
9	Traditional and cultural uses are recognized within DEVRES.

Developed Winter and Summer Resort MA Standards (MA-DEVRES-S)

1	Any road/trail system within DEVRES shall be developed and maintained by the permittee. Only permitted motor-vehicle use within this management area is allowed.

Developed Winter and Summer Resort MA Guidelines (MA-DEVRES-G)

1	Scenic values of DEVRES should be protected through the application of basic landscape aesthetics and design principles.
2	Visibility of structures (e.g. ski lifts, roads, utilities, buildings, signs, and other man-made facilities) should be limited, in order to minimize their impacts outside the management area.
3	Facilities and transportation routes that are no longer used within DEVRES should be removed or rehabilitated.

Management Approaches for the Developed Winter and Summer Resort MA

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1.

Related Plan Content for Developed Winter and Summer Resort MA

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Jicarilla Natural Gas Management Area (JICMA)

Oil and natural gas development on the Carson NF is currently limited to the Jicarilla RD (Figure 12). Leasing is authorized over the entire Jicarilla RD, with the exception of the historic Gasbuggy Site (640 ac).[1] Leasing activity varies with fluctuations in the price of oil and gas. Resource issues and conflicts surrounding oil and gas development on the Jicarilla RD primarily consist of effects to cultural resources. Traditionally these resources have been avoided, but in recent years site mitigation has been proposed, but not conducted. The Jicarilla RD has a high density of archeological sites and cultural resources are often the final driving force for well pad and access road location. Wildlife issues primarily influence projects proposed near northern goshawk or Mexican spotted owl habitat. These issues are mitigated with survey requirements and timing limitations.

It is important to note that the special lease stipulations apply only to new leases. Pre-existing leases are subject to the stipulations of their leases. However, new development on existing leases must also comply with management direction of this plan.[2] Any additional mitigation measures would need to be justifiable, still provide reasonable access for the leaseholder and would be incorporated in a site-specific document.

Amendment 13 of the 1986 forest plan identifies five Areas of Resource Concern with important resource values that need to be protected on the Jicarilla RD. These areas and their resource values are:

- Bancos Canyon (cultural resources, watershed, wildlife habitat, and seclusion)
- La Jara Canyon (undeveloped characteristics, cultural resources, wildlife security, seclusion)
- Valencia Canyon (undeveloped characteristics, cultural resources, wildlife security, seclusion)
- Fierro Mesa and Canyon (undeveloped characteristics)
- Vaqueros Canyon (visual resources, wildlife habitat)

The Jicarilla Roads Committee is a longstanding, unique partnership between the Jicarilla RD and oil and gas lease and pipeline operators. Each year, operators pledge a certain amount of services, equipment, and money to conduct maintenance on approximately over 100 miles of NFS roads. The committee has been funding annual road maintenance on the Jicarilla RD since 2000, with an annual maintenance budget of over $200,000.

[1] The location of a nuclear experiment to fracture formations to increase gas flow conducted in 1967. The Atomic Energy Commission (now the Department of Energy) withdrew the area from leasing through Public Land Order 4232.

[2] This direction is consistent with Interior Board of Land Appeals decisions (Yates Petroleum Corp., IBLA 2006-213, 2006-226 and William P. Maycock, IBLA 2008-197, 2008-200), which give the Bureaua of Land Management (BLM) discretion to modify surface operations to add specific mitigation measures supported by site-specific NEPA analysis undertaken during the development phase on existing leases (CO-2010-028).

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Jicarilla Natural Gas MA Desired Conditions (MA-JICMA-DC)

1 Oil and natural gas development is consistent with mineral and leasing laws and valid existing rights in a manner that minimizes adverse impacts to surface and groundwater resources, air quality, watershed and forest ecosystem health, wildlife and wildlife habitat, scenic character, and other desired conditions applicable to the area and similar desired conditions on adjacent federal and tribal lands.

2 The resource values of each Area of Resource Concern (currently Bancos Canyon, La Jara Canyon, Valencia Canyon, Fierro Mesa and Canyon, and Vaquero Canyon) are protected, maintained, and enhanced.

Jicarilla Natural Gas MA Standards (MA-JICMA-S)

1 All newly developed facilities shall comply with the air quality mitigation requirements set forth by the New Mexico Air Quality Bureau. When existing facilities are updated, these mitigation measures will also be followed.

2 Sound levels generated by oil and gas production and transportation shall comply with BLM direction for sound in the San Juan Basin described in the "Notice to Lessees and Operators on Onshore Oil and Gas Leases within the jurisdiction of the Farmington BLM Field Office" (NTL 04-2 FFO). As changes occur over time, the Forest Service will continue to adopt the BLM standards as they develop.

3 New drilling activity and completions shall be limited to April 1 through October 31. This applies as a condition of approval in new leases. Exceptions may be considered on a case-by-case basis. Normal recurring production and day-to-day operations will continue to occur year-round.

4 Well pad construction shall be excluded in riparian areas.

5 New roads crossing slopes greater than 40% that do not specify controlled surface use shall be avoided, unless there is no other option - then an engineering design approved by the Forest Service is required to support road construction on slopes greater than 40%.

6 Maximum grades shall be limited to 8% for new roads, unless pitches are less than 300 feet (up to 10% permitted in some cases).

7 Pipelines shall be aligned along existing roads and rights-of-way and pipes shall be located to allow multiple surface uses and co-location of infrastructure (e.g., water lines, electrical lines, etc.) to occur on top of or near these lines, to minimize surface disturbance.

8 Lands disturbed in conjunction with lease development activities shall be reclaimed to stable and productive conditions, to meet forest-wide desired conditions, multiple use goals, and any specific resource needs identified during project level NEPA analysis.

9 A 5-year development strategy shall be required, prior to proposed development on leases in areas of resource concern (Bancos Canyon, La Jara Canyon, Valencia Canyon, Fierro Mesa and Canyon, and Vaquero Canyon).

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10 The following stipulations apply to new leases, including those pending, currently unleased, and any existing leases that become available for leasing in the future:

a. No Surface Occupancy (NSO): A NSO stipulation shall be applied to new leases in Bancos Canyon, La Jara Canyon, Valencia Canyon (beyond 300 feet from existing roads), and Fierro Canyon, and in Mexican spotted owl critical habitat. Leasing with a no surface occupancy stipulation in these areas of resource concern makes energy resources available for companies willing to employ unconventional drilling technology. Extraction of these energy resources without roads or well pads allows the Forest Service to pursue the management objectives of protecting undeveloped characteristics, cultural resources, wildlife habitat, and seclusion of these areas.

b. Controlled Surface Use (CSU): A CSU stipulation shall be applied to new leases on the JICMA, to minimize the potential for excessive erosion and loss of soil productivity. With the exception of areas where a NSO stipulation is applied, new leases on the rest of JICMA are open to development subject to the following constraints: (1) no well pad construction on slopes greater than 20%, with cuts over 15 feet in depth and (2) no roads on side slopes greater than 40%.

c. Timing Restrictions: New drilling activity or completion (e.g., construction, drilling, completions, swabbing, pump changes, tubing changes, replacing production equipment, or any other maintenance activity that requires heavy equipment) is limited to April 1 through October 31. This timing restriction does not apply to day-to-day maintenance and operation of producing wells.

d. Cultural Resource Lease Notice: The following will be included in all future lease packages prior to sale. “All development activities proposed under the authority of this lease are subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) and Executive Order 13007. The lease may contain historic properties, traditional cultural properties (TCPs), and/or sacred sites currently unknown to the Forest Service during the lease parcel review process. Depending on the nature of the lease developments and activities being proposed, the Forest Service will not approve any activities as part of future lease operations that have the potential to affect TCPs and historic properties, until it completes applicable requirements of the NHPA, including any required procedure for notification and consultation with appropriate Indian tribe(s) and/or the State Historic Preservation Officer (SHPO). Mitigation measures may be required to avoid, minimize, or mitigate adverse effects to historic properties and TCPs, the costs of which will be borne by the lessee. The Forest Service may require modifications to surface use plans of operations or disapprove proposed exploration or development activities that are likely to adversely affect historic properties, TCPs, or sacred sites for which no mitigation measures are possible. This could result in extended timeframes for processing authorizations for development activities, as well as changes in the ways in which development are implemented.”

11 Restoration and reclamation of surface disturbance from well pad construction and well drilling shall be completed to achieve 70% of the groundcover (compared to nearby

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undisturbed areas), with permanent native vegetation within 3 growing seasons. The success of groundcover establishment shall be monitored until 70% of the groundcover is attained. Reclamation meeting the same standard is required for redisturbance of revegetated areas.

Jicarilla Natural Gas MA Guidelines (MA-JICMA-G)

1 The use of drilling techniques, such as directional/horizontal drilling and well siting measures (e.g., co-location and twinning and closed loop drilling), should be recommended, to minimize impacts to surface resources. The use of existing well pads, roads, and pipeline rights-of-way for new facilities should also be encouraged.

2 Established best management practices (BMPs) found in the most current version of the Oil and Gas Surface Operating Standards for Oil and Gas Development (Gold Book) or other applicable sources should be applied to natural gas activities.

3 Electrification of lease facilities should be recommended, to minimize noise and emissions related to internal combustion engines for new and existing leases.

4 Oil and gas related seismic activities should be conducted on established roads or utilizing heli-portable equipment for cross country operations, to minimize surface disturbance.

5 To prevent erosion, well pad construction on slopes greater than 20%, with cuts over 15 feet, should be avoided, unless there is no other option.

6 All new lease roads over 300 feet in length should be closed to public motorized access, except where other resource needs dictate the road should be left open to the public, to reduce motor vehicle impacts.

7 Loop roads to access leases should be permitted only where a transportation proposal developed by the operator and approved by the Forest Service demonstrates that there would be a benefit to surface resources.

8 To minimize impacts to ecological and cultural resources, centralized collection points and water pipelines for drilling and produced water should be recommended.

9 Reclaimed areas should be monitored and maintained, to minimize the establishment of invasive plants during the reclamation period.

10 Vaqueros Canyon Area of Resource Concern – Design criteria for oil and gas development activities should adhere to the natural characteristics dominating the landscape.

Management Approaches for Jicarilla Natural Gas MA

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illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider alternative drilling technology and various site locations, prior to developing new well sites, roads, or pipelines within an area of resource concern, to minimize the impacts to surface resources.
2. Continue with the partnership between the Forest Service and natural gas lease and pipeline operators (Jicarilla Roads Committee) to provide services, equipment, and money in maintaining roads on the Jicarilla RD.
3. Consider offsite mitigation based on the scope and complexity of the project or adverse impacts to resources due to development.

Related Plan Content for Jicarilla Natural Gas MA

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To effectively manage to the desired conditions of a forest resource, project planners and decision makers must ensure they utilize the entire plan and not just the plan components listed for that resource. Effective integrated resource management recognizes the interdependency of ecological, social, cultural, and economic resources and how management of one resource can influence the management or condition of other resources.

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Grassland Maintenance Management Area (GMMA)

The Carson NF has converted some stands of piñon pine and juniper and ponderosa pine to production of native and introduced grass species. There are a total of 61,824 acres that have been identified for maintenance as grasslands through active management (Figure 13). The original conversions were accomplished by plowing, chaining, dozer piling, tree crushing, and hand clearing with chainsaws then seeding to grass, primarily crested wheat. These conversion projects began in the late 1940s and have continued to be maintained. Generally, these areas are flat to gently rolling. The soils have high revegetation potential and low to moderate erosion hazard. Most of the converted areas provide valuable habitat for many species of wildlife, and many are key elk and deer winter range. The primary purpose of these conversion areas is to increase available forage for grazing, and they need to be maintained in a seral grass state if the Carson is to maintain its grazing commitment.

Grassland Maintenance MA Desired Conditions (MA-GMMA-DC)

1 In previously converted areas, vegetation is maintained mechanically, chemically, or with fire in a seral grass state with tree and shrub canopy cover of less than 10% each.

2 Regeneration, seed head production, and a balance of grass and forb species, including warm and cool season species, occur in most years and within the capability of soils.

3 Soil function is sustained. Soils are permeable and capable of infiltrating water to reduce overland flows during precipitation events and allow for burrowing by small mammals (Gunnison's prairie dog and masked shrew). Adequate water infiltration discourages arroyos, gullies, and head cuts from forming in drainages. Existing arroyos and gullies are stabilizing and recovering.

Grassland Maintenance MA Standards (MA-GMMA-S)

1 Unconverted portions of this management area are managed consistent with the appropriate vegetation community plan direction.

2 Native grass seed shall be used when reseeding is required, to reestablish native vegetation.

3 Reseeding shall focus on areas where herbaceous groundcover prior to treatment is less than 30%.

Related Plan Content for Grassland Maintenance MA

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Valle Vidal Management Area (VVMA)

Valle Vidal ("Valley of Life") Management Area is approximately 100,000 acres of rolling, grassland meadows surrounded by conifers, bristlecone pines, and aspen stands in the northern portion of the Questa Ranger District (Figure 14). On December 31, 1981, the Pennzoil Company donated a portion of its 492,560-acre Vermejo Ranch in northeastern New Mexico to the people of the United States through the USDA Forest Service. The special warranty deed that accompanied the donation specifically: (1) excludes the mining claims and town site within the La Belle area; (2) conveys all improvements located on the lands transferred; (3) recognizes the perpetual coal royalty interest Indenture Agreement with Kaiser Corporation; and (4) includes 2 road easements to Vermejo Park. No other provisions or restrictions were included in the deed.

The VVMA's streams and lakes are the headwaters of the Costilla and Ponil watersheds. All of the perennial streams within Valle Vidal are designated as Outstanding National Resource Waters by the State of New Mexico. Forests are predominantly spruce-fir, ponderosa pine, and mixed conifer, interspersed with aspen. There are large, contiguous stands of mature bristlecone pine and mixed stands of bristlecone, aspen, and large Douglas-fir trees. The variety of forest age classes and structures provides diverse habitats with abundant wildlife.

The VVMA is managed for multiple uses, focusing on the restoration and protection of diverse, resilient, biological communities for future generations, while providing a quality outdoor recreation experience. Wildlife habitats provide for a diversity of native plants, fish, and wildlife. Frequent fire plays a role in lessening the probability of a catastrophic wildfire, while contributing to the reestablishment of ecological processes. With its large, open meadows, Valle Vidal supports one of New Mexico's largest elk herds. Meadows are not only significant to elk, but also provide one of Valle Vidal's many scenic features for outdoor recreationists.

The VVMA is a special place to the people of New Mexico and people from around the world, who come to marvel at the impressive views and its prized elk herd and their calves, to enjoy recreation and sporting opportunities, and to catch the rare Rio Grande cutthroat trout. Not only does the Valle Vidal offer outstanding scenic, wildlife viewing, and recreational opportunities, it also serves as an important resource for the ranching and agricultural communities of New Mexico, with its fresh water, firewood, and traditional grazing lands.

Valle Vidal MA Desired Conditions (MA-VVMA-DC)

1 Sustainable populations of terrestrial and aquatic plant and animal species are supported by healthy ecosystems, as described by Vegetation and Watersheds and Water desired conditions, especially within young rearing and winter range habitat of ungulates

2 Species are free from harassment and human disturbance at a scale that impacts vital functions (e.g., breeding, feeding, and rearing young) that could affect persistence of the species.

3 Habitat conditions are capable of supporting self-sustaining native aquatic species populations and are consistent with New Mexico Department of Game and Fish's fisheries management plans.

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4 A variety of outstanding outdoor recreation experiences are available, with an emphasis on primitive and semi-primitive settings.

5 Opportunities for outdoor, nature-based education (e.g., youth development and wilderness skills) and inspiring land stewardship are provided.

Valle Vidal MA Standards (MA-VVMA-S)

1 Except Forest Road 1950, the west-side (Taos Co.) shall be closed to all public entry from May 1 to June 30, to provide security for elk calving.

2 Except Forest Road 1950, Forest Road 1910, and Forest Road 1900, the east-side (Colfax Co.) shall be closed to all public entry from January 1 to March 31, to provide security for elk winter range.

3 Over-snow motor vehicle use is prohibited on the eastside (Colfax Co.) and above Forest Road 1950 on the west-side (Taos Co.).

4 Long-term public vehicle access into Valle Vidal shall be limited to the Cerrososo Canyon and Costilla Creek routes, along existing Forest Road 1950.

5 The designated road system open to the public at current maintenance levels includes forest roads 1900, 1910, 1913, 1914, 1915, 1916, and 1950. No roads for public access shall be added to the current designated road system.

6 The number of designated overnight parking areas shall be limited to 21.

7 Vehicle camping is prohibited, except at developed campgrounds.

8 Overnight parking for backcountry camping shall be limited to designated parking areas.

9 Backcountry camping within 0.5 mile of open roads, 100 yards of natural waters, or 300 yards of man-made waters is prohibited.

10 Feeding, tethering, and holding of horses are prohibited within developed campgrounds, except at designated equestrian sites and Clayton Corral.

11 Any livestock feed brought into Valle Vidal MA shall be either commercially processed (pelletized) feed or certified weed-free hay.

12 Gathering of downed, dead, or green trees for firewood shall be allowed only in designated areas and authorized through a fuelwood permit issued by the Forest Service.

13 Shuree Canyon Pasture shall be used by permitted livestock as a trailing pasture only.

14 Development of commercial infrastructure for renewable power generation is prohibited.

15 For-profit commercial facilities are prohibited in Valle Vidal MA.

16 Designated public and commercial communication or electronic sites are prohibited.

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17 Outstanding (existing) mineral rights shall be recognized as authorized by the United States mining laws (30 U.S.C. 21-54). Any entry to access existing mineral rights will be conducted in an environmentally sound way through appropriate administration of mineral laws and regulations so as to minimize adverse environmental effects on National Forest System resources. Site-specific analysis shall occur to evaluate potential effects and develop appropriate mitigation measures. Operating plans and bonds shall be used if needed, to ensure protection and restoration of surface resources.

18 In compliance with the Valle Vidal Protection Act of 2006, Valle Vidal MA is withdrawn from:

a. all forms of mineral entry, appropriation, and disposal under the public land laws;

b. location, mineral entry, and patent under the mining laws; and

c. operation of the mineral leasing and geothermal leasing laws and common variety mineral materials laws.

19 The withdrawal under the Valle Vidal Protection Act is subject to valid existing rights. If these existing rights are relinquished or otherwise acquired by the United States at any time after the date of the enactment of this Act, the lands that were subject to the rights shall be immediately withdrawn.

20 Extraction of common variety minerals for commercial or public use is prohibited.

Valle Vidal MA Guidelines (MA-VVMA-G)

1 Any temporary project-level motorized routes or temporary road construction must be rehabilitated within 2 years of project completion, to protect the recreation experience.

2 Temporary roads should not be allowed, except to meet resource objectives, to protect the recreational experience.

Management Approaches for Valle Vidal MA

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider working with groups and individuals interested in the management of Valle Vidal to provide guidance during planning, implementation, and monitoring of environmental restoration projects.

2. Consider identifying and working with partners to restore Shuree Lodge (in keeping with the National Historic Preservation Act and in consultation with the State Historic Preservation

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complicated, trying to preserve the valid existing rights

Officer), to use for nonprofit activities open to the public, such as an interpretive center, volunteer lodging during educational and cultural events, and/or as an administrative facility. Other historic structures may also be restored and adaptively reused. Potential uses include renting cabin(s) to the public as part of the Forest Service cabin rental program, administrative needs, and/or other appropriate uses. No for-profit commercial facilities are allowed.

Related Plan Content for Valle Vidal MA

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San Antonio Management Area (SAMA)

San Antonio Management Area is approximately 117,035 acres of rolling, grassland surrounded by conifers, ponderosa pines, and aspen stands in the northern portion of the Tres Piedras Ranger District (Figure 15). The SAMA contains the Rio San Antonio gorge, San Antonio Mountain, streams with Rio Grande cutthroat trout populations, Continental Divide National Scenic Trail, speckled granite outcrops, eligible wild and scenic rivers, wetlands, and the existing Cruces Basin Wilderness. San Antonio Mountain is the largest free standing mountain in the Lower 48. It is the tallest of the "Cerros", a solitary volcanic peak rising out of the desert floor. There is a crater (caldera) at the summit, with unique alpine grassland ecology. This area contains the renowned SAM Cave, (one of) the oldest lava tube(s) in North America, with some of the oldest mammalian fossils ever found. Forests are predominantly spruce-fir, ponderosa pine, and mixed conifer, interspersed with aspen. The variety of forest age classes and structures provides diverse habitats with abundant wildlife.

San Antonio MA is managed for multiple uses, focusing on the protection of diverse, resilient, biological communities for future generations, while providing a quality outdoor recreation experience. Wildlife habitats provide for a diversity of native plants, fish, and wildlife. Frequent fire plays a role in lessening the probability of a catastrophic wildfire, while contributing to the reestablishment of ecological processes. With its large, grasslands, SAMA supports one of New Mexico's largest elk herds during critical winter months.

San Antonio MA is a special place to marvel at the prized elk herds, to enjoy recreation and sporting opportunities (e.g., hunting, mountain biking, snowmobiling), and to catch the rare Rio Grande cutthroat trout. Not only does the SAMA offer wildlife viewing and recreational opportunities, it also serves as an important resource for the ranching and agricultural communities of New Mexico, with its fresh water, firewood, and traditional grazing lands.

San Antonio MA Desired Conditions (MA-SAMA-DC)

1 Sustainable populations of terrestrial and aquatic plant and animal species, are supported by healthy ecosystems, as described by Vegetation and Watersheds and Water desired conditions.

2 Wildlife and fish species are free from harassment and human disturbance at a scale that impacts vital functions (e.g., breeding, feeding, and rearing young) that could affect persistence of the species.

3 A variety of outstanding outdoor recreation experiences are available, with an emphasis on primitive and semi-primitive settings.

4 NFS lands exist as a mostly contiguous land base that best provides for and contributes to management of vegetation and watershed health, wildlife habitat and diversity, and recreation and scenic opportunity.

San Antonio MA Standards (MA-SAMA-S)

1 No new permanent roads for public access shall be constructed.

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2 Temporary roads that support ecosystem restoration activities, fuels management, or other short-term projects shall be closed and rehabilitated upon project completion, to protect watershed condition, minimize wildlife disturbance, and prevent illegal motorized use.

3 New or reconstructed fencing shall allow for wildlife passage, except where specifically intended to exclude wildlife (e.g., elk exclosure fence) and/or to protect human health and safety.

4 New and reconstructed range improvements must be designed to prevent wildlife entrapment and provide safe egress for wildlife (e.g., escape ramps in water troughs and cattleguards).

5 Outstanding (existing) mineral rights shall be recognized as authorized by the United States mining laws (30 U.S.C. 21-54). Any entry to access existing mineral rights will be conducted in an environmentally sound way through appropriate administration of mineral laws and regulations so as to minimize adverse environmental effects on National Forest System resources. Site-specific analysis shall occur to evaluate potential effects and develop appropriate mitigation measures. Operating plans and bonds shall be used if needed, to ensure protection and restoration of surface resources.

6 Development of commercial infrastructure for renewable power generation is prohibited.

7 Extraction of common variety minerals for commercial or public use is prohibited.

San Antonio MA Guidelines (MA-SAMA-G)

1 Management activities should avoid disturbance to big game species during birthing season and on winter range during the winter period. Management activities should concentrate activities in time and/or space to reduce impact to big game species. Timing restrictions, adaptive percent utilizations, distance buffers, or other means of avoiding disturbance should be based on the best available information, as well as site-specific factors (e.g., topography, available habitat, etc.).

Management Approaches for San Antonio MA

Potential management approaches may be used to inform future proposed and possible actions. These techniques and actions provide options for plan implementation, and represent possibilities, preferences, or opportunities, rather than obligatory actions. Not all plan components are addressed, only those for which additional information is warranted. They may illustrate suggestions as to how desired conditions and/or objectives could be met, convey a sense of priority among objectives, or indicate possible future course of change to a program.

1. Consider improving wildlife or aquatic habitat connectivity within the San Antonio MA by removing unneeded structures (e.g., fences, roads, cattleguards, and culverts) or completing improvement projects (e.g., removing barriers and connecting fragmented habitat).
2. Consider projects in the San Antonio MA that improve habitat connectivity for aquatic and riparian species (e.g., remove barriers, restore dewatered stream segments, connect fragmented habitat, wildlife passage friendly fences, etc.).

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3. Consider working with groups and individuals interested in the management of the greater San Antonio landscape, to provide guidance during planning, implementation, and monitoring of environmental restoration projects.
4. Consider coordinating with adjacent landowners, federal and state land managers, and state agencies when ground disturbing activities are proposed in the SAMA. Consider the cumulative impacts of ground-disturbing projects that are occurring or will occur on adjacent lands and whether the spatial, temporal, or other design features can mitigate impacts to connectivity.
5. Consider the amounts, arrangements, and condition of natural communities and habitats that benefit wildlife, during planning by multiple resource areas including range, fire, and timber.
6. Coordinate with the NMDGF, USFWS, adjacent federal land managers, sportsman's groups, the scientific community, and other stakeholders regarding information, education, and knowledge gaps as they relate to promoting and improving wildlife, fish, and plant resources and management.
7. Consider identifying linkages and barriers to wildlife movements and mitigating impacts during project design, by working with NMDGF, NMDOT, federally recognized tribes, federal, state, and local agencies, federal and state land managers, private land owners, and other organizations.

Related Plan Content for San Antonio MA

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Chapter 4. Forest Plan Monitoring Program

This chapter includes the Forest Plan Monitoring Program. Monitoring is the part of the adaptive management strategy used to determine the degree to which on-the-ground management is maintaining or making progress toward desired conditions. The monitoring plan includes questions and performance measures designed to evaluate implementation and effectiveness, and inform adaptive management.

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are they using sound science that is developed by land grant colleges ?

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Forest Plan Glossary

Acequia or community ditch. A historical community ditch in New Mexico that carries snow runoff, spring flows, or river water to irrigate fields and is administered by a governing board.

Adaptation. Adjustment in natural or human systems to a new or changing environment. Adaptation includes, but is not limited to, maintaining primary productivity and basic ecological functions, such as energy flow; nutrient cycling and retention; soil development and retention; predation and herbivory; and natural disturbances. Adaptation occurs primarily by organisms altering their interactions with the physical environment and other organisms.

Adaptive capacity. The ability of ecosystems to respond, cope, or adapt to disturbances and stressors, including environmental change, to maintain options for future generations. As applied to ecological systems, adaptive capacity is determined by:

1. Genetic diversity within species in ecosystems, allowing for selection of individuals with traits adapted to changing environmental conditions.
2. Biodiversity within the ecosystem, both in terms of species richness and relative abundance, which contributes to functional redundancies.
3. The heterogeneity and integrity of ecosystems occurring as mosaics within broader-scaled landscapes or biomes, making it more likely that some areas will escape disturbance and serve as source areas for re-colonization.

Adaptive management. Adaptive management is the general framework encompassing the three phases of planning: assessment, plan development, and monitoring (36 CFR 219.5). This framework supports decision-making that meets management objectives while simultaneously accruing information to improve future management by adjusting the plan or plan implementation. Adaptive management is a structured, cyclical process for planning and decision-making in the face of uncertainty and changing conditions with feedback from monitoring, which includes using the planning process to actively test assumptions, track relevant conditions over time, and measure management effectiveness.

Airshed. A geographic area that, because of topography, meteorology, and/or climate is frequently affected by the same air mass.

Assessment. For the purposes of the land management planning regulation at 36 CFR part 219 and this Handbook, an assessment is the identification and evaluation of existing information to support land management planning. Assessments are not decision-making documents, but provide current information on select topics relevant to the plan area, in the context of the broader landscape (36 CFR 219.19).

At-risk species. A term used in land management planning and this Handbook to refer to, collectively, the federally recognized threatened, endangered, proposed, and candidate species and species of conservation concern within a plan area.

Authorized livestock numbers. Year to year actual stocking of livestock on a grazing allotment, based on forage and water availability, condition of range improvements, climatic conditions, personal convenience for the permit holder, or resource protection. Authorized numbers are not necessarily the number on the permit.

Base area (winter and summer resorts). The developed area at the bottom of a winter/summer resort.

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Base property (grazing). Land and improvements owned and used by the permit holder for a farm or ranch operation and specifically designated by the permit holder to qualify for a term grazing permit.

Best management practices (BMPs). Methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 CFR 219.19).

Broader landscape. For land management planning pursuant to 36 CFR 219, the plan area and the lands surrounding the plan area. The spatial scale of the broader landscape varies depending upon the social, economic, and ecological issues under consideration.

Candidate species (36 CFR 219.19).

1. For species under the purview of the U.S. Fish and Wildlife Service (USFWS), a species for which the USFWS possesses sufficient information on vulnerability and threats to support a proposal to list as endangered or threatened, but for which no proposed rule has yet been published by the USFWS.
2. For species under the purview of the National Marine Fisheries Service (NMFS), a species that is:
    a. The subject of a petition to list as a threatened or endangered species and for which the (NMFS) has determined that listing may be warranted, pursuant to section 4(b)(3)(A) of the Endangered Species Act (16 U.S.C. 1533(b)(3)(A)), or
    b. Not the subject of a petition but for which the (NMFS) has announced in the Federal Register the initiation of a status review.

Chaining. Uprooting of trees and shrubs to create a seedbed by pulling a chain behind two tractors traveling parallel to each other.

Climate change. A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide.

Coarse woody debris (CWD). Fallen dead trees and the remains of large branches on the ground in forests and in rivers or wetlands.

Collaboration or collaborative process. A structured manner in which a collection of people with diverse interests share knowledge, ideas, and resources, while working together in an inclusive and cooperative manner toward a common purpose. Collaboration, in the context of the land management planning regulation at 36 CFR part 219 and this Handbook, falls within the full spectrum of public engagement described in the Council on Environmental Quality's publication of October, 2007: Collaboration in NEPA— A Handbook for NEPA Practitioners (36 CFR 219.19).

Common variety mineral materials. A collective term to describe petrified wood and common varieties of sand, gravel, stone, pumice, pumicite, cinders, clay, and other similar materials. Common varieties do not include deposits of those materials which are valuable because of some property giving them distinct and special value.

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Connectivity. Ecological conditions that exist at several spatial and temporal scales that provide landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change (36 CFR 219.19).

Conservation. The protection, preservation, management, or restoration of natural environments, ecological communities, and species (36 CFR 219.19).

Conserve. For the purpose of meeting the requirements of 36 CFR 219.9, to protect, preserve, manage, or restore natural environments and ecological communities to potentially avoid federally listing of proposed and candidate species (36 CFR 219.19).

County Wildfire Protection Plan (CWPP). A comprehensive community based planning and prioritization approach for protection of life, property, and critical infrastructure in the wildland-urban interface. Protection plans may take a variety of forms based on the needs of the community, but must be collaboratively developed, identify and prioritize areas for hazardous fuel reduction treatments, recommend treatment types and methods, and recommend measures that homeowners and communities can take to reduce the ignitability of structures. The planning process may also identify management options and implications in the surrounding landscape. The Healthy Forests Restoration Act (HFRA) of 2003 instructed the US Forest Service to give consideration of community priorities as outlined in a CWPP during planning and implementation of hazardous fuel reduction projects.

Critical habitat. For a threatened or endangered species, (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (ESA) (16 U.S.C. 1533), on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA (16 U.S.C. 1533), upon a determination by the Secretary that such areas are essential for the conservation of the species. ESA, sec. 3 (5)(A), (16 U.S.C. 1532 (3)(5)(A)). Critical habitat is designated through rulemaking by the Secretary of the Interior or Commerce. ESA, sec. 4 (a)(3) and (b)(2) (16 U.S.C. 1533 (a)(3) and (b)(2)).

Decision document. A record of decision, decision notice, or decision memo (36 CFR 220.3).

Decommission. Treated in such a manner so as to no longer function as intended. Usually in reference to decommissioning of a road so that it no longer is apparent on the landscape.

Departure. The degree to which the current condition of a key ecosystem characteristic is unlike the desired condition.

Designated area. An area or feature identified and managed to maintain its unique special character or purpose. Some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the Federal executive branch. Examples of statutorily designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, wilderness areas, and wilderness study areas. Examples of

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administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and significant caves (36 CFR 219.19).

Designated road, trail, or area. A National Forest System road, a National Forest System trail, or an area on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map (36 CFR 212.1).

Desirable nonnative. Nonnative species that were intentionally released into the wild to establish self-sustaining populations of wildlife that meet public demands for recreation or other purposes (e.g., sport fishes). These desirable nonnative species are not likely to cause ecosystem disruption.

Desired conditions. For the purposes of the land management planning regulation at 36 CFR 219, a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but do not include completion dates (36 CFR 219.7(e)(1)(i)). Desired conditions are achievable, and may reflect social, economic, or ecological attributes, including ecosystem processes and functions.

Disturbance. Any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment (36 CFR 219.19).

Disturbance regime. A description of the characteristic types of disturbance on a given landscape; the frequency, severity, and size distribution of these characteristic disturbance types; and their interactions (36 CFR 219.19).

Easement. A type of special use authorization (usually granted for linear rights-of-way) that is utilized in those situations where a conveyance of a limited and transferable interest in National Forest System land is necessary or desirable to serve or facilitate authorized long-term uses, and that may be compensable according to its terms (36 CFR 251.51).

E-bike (electric bicycle). A bicycle with an integrated electric motor that can be used for propulsion, in addition to pedaling. An e-bike is considered a motor vehicle and is subject to regulation under the Travel Management Rule (36 CFR § 212.51 (a)).

Ecological conditions. The biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems. Ecological conditions include habitat and other influences on species and the environment. Examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species (36 CFR 219.19).

Ecological function. The biological, chemical, and physical processes and components that take place or occur within an ecosystem.

Ecological integrity. The quality or condition of an ecosystem when its dominant ecological characteristics (e.g., composition, structure, function, connectivity, and species composition and

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diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence (36 CFR 219.19).

Ecological process. The physical, chemical, and biological actions or events that link organisms and their environment including decomposition, production (of plant matter), nutrient cycling, and fluxes of nutrients and energy.

Ecological response unit (ERU). A classification of a unit of land that groups sites by similar plant species composition, succession patterns, and disturbance regimes, such that similar units will respond in a similar way to disturbance, biological processes, or manipulation. Each ERU characterizes sites with similar composition, structure, function, and connectivity, and defines their spatial distribution on the landscape.

Ecological sustainability. See sustainability.

Ecological system. See ecosystem.

Economic sustainability. See sustainability.

Ecosystem. (36 CFR 219.19) A spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. An ecosystem is commonly described in terms of its:

3. Composition. The biological elements within the different levels of biological organization, from genes and species to communities and ecosystems.
4. Structure. The organization and physical arrangement of biological elements, such as, snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.
5. Function. Ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances, such as wind, fire, and floods.
6. Connectivity. See connectivity above.

Ecosystem diversity. The variety and relative extent of ecosystems (36 CFR 219.19).

Ecosystem integrity. See ecological integrity.

Ecosystem services. Benefits people obtain from ecosystems, including:

1. Provisioning services, such as clean air and fresh water, energy, food, fuel, forage, wood products or fiber, and minerals;
2. Regulating services, such as long-term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood and drought control; and disease regulation;
3. Supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and
4. Cultural services, such as educational, aesthetic, spiritual, and cultural heritage values, recreational experiences, and tourism opportunities.

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Ecotone. The transition zone between two adjoining ecological communities.

Encroachment. An increase in the density and cover of trees or shrubs in grasslands that reduces grass biomass, density, and cover.

Endangered species. Any species that the Secretary of the Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range. Endangered species are listed at 50 CFR sections 17.11, 17.12, and 224.101.

Environmental impacts. Possible adverse effects caused by a development, industrial, or infrastructural project or by the release of a substance in the environment.

Ephemeral stream. A stream that flows only in direct response to precipitation in the immediate locality (watershed or catchment basin), and whose channel is at all other times above the zone of saturation.

Even-aged stand. A stand of trees composed of a single age class (36 CFR 219.19).

Federally recognized tribe. An Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Indian Tribe List Act of 1994, 25 U.S.C. 479a (36 CFR 219.19).

Fire regime. The pattern, frequency, and intensity wildfire that prevails in an area over long periods of time.

Frequent fire-dependent ecosystem. A vegetation community that requires a fire regime 1 (>35 year fire frequency) in order to maintain its natural function, structure, and species composition.

Functional ecosystem. A system with intact abiotic and biotic processes. Function focuses on the underlying processes that may be degraded, regardless of the structural condition of the ecosystem. Functionally restored ecosystems may have a different structure and composition than the historical reference condition. As contrasted with ecological restoration that tends to seek historical reference condition, function refers to the dynamic processes that drive structural and compositional patterns. Functional restoration is the manipulation of interactions among process, structure, and composition in a degraded ecosystem to improve its operations. Functional restoration aims to restore functions and improve structures with a long-term goal of restoring interactions between function and structure. It may be, however, that a functionally restored system will look quite different than the reference condition in terms of structure and composition and these disparities cannot be easily corrected because some threshold of degradation has been crossed or the environmental drivers, such as climate, that influenced structural and (especially) compositional development have changed.

Groundcover. The layer of dead and living vegetation that provides protection of the topsoil from erosion and drought.

Groundwater-dependent ecosystem. Community of plants, animals, and other organisms whose extent and life processes depend on groundwater. Examples include many wetlands, groundwater-fed lakes and streams, cave and karst systems, aquifer systems, springs, and seeps.

Habitat fragmentation. The process by which habitat loss results in the division of large, continuous habitats into smaller more isolated remnants.

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Habitat type. A land or aquatic unit, consisting of an aggregation of habitats having equivalent structure, function, and responses to disturbance.

Historic Properties. Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places.

Hydrologic unit code (HUC). A unique hierarchical hydrologic unit based on the area of land that drains to a single stream mouth or outlet at each level, and nested levels are identified by successively longer codes. A HUC 8 sub-basin is 700 square miles or larger and is divided into multiple HUC 10 watersheds that range from 62 to 390 square miles. HUC 12 sub-watersheds are 15 to 62 square miles and nest inside HUC 10 watersheds.

Infill. An increase in trees per acre in forests and woodlands, resulting in a decrease in the quality and size of interspaces.

Information. For information collection from the public pursuant to 5 CFR part 1320, any statement or estimate of fact or opinion, regardless of form or format, whether in numerical, graphic, or narrative form, and whether oral or maintained on paper, electronic or other media. “Information” does not generally include items in the following categories; however, OMB may determine that any specific item constitutes “information”:

1. Affidavits, oaths, affirmations, certifications, receipts, changes of address, consents, or acknowledgments; provided that they entail no burden other than that necessary to identify the respondent, the date, the respondent's address, and the nature of the instrument (by contrast, a certification would likely involve the collection of “information” if an agency conducted or sponsored it as a substitute for a collection of information to collect evidence of, or to monitor, compliance with regulatory standards, because such a certification would generally entail burden in addition to that necessary to identify the respondent, the date, the respondent's address, and the nature of the instrument);
2. Samples of products or of any other physical objects;
3. Facts or opinions obtained through direct observation by an employee or agent of the sponsoring agency or through nonstandardized oral communication in connection with such direct observations;
4. Facts or opinions submitted in response to general solicitations of comments from the public, published in the Federal Register or other publications, regardless of the form or format thereof, provided that no person is required to supply specific information pertaining to the commenter, other than that necessary for self-identification, as a condition of the agency's full consideration of the comment;
5. Facts or opinions obtained initially or in follow-on requests, from individuals (including individuals in control groups) under treatment or clinical examination in connection with research on or prophylaxis to prevent a clinical disorder, direct treatment of that disorder, or the interpretation of biological analyses of body fluids, tissues, or other specimens, or the identification or classification of such specimens;
6. A request for facts or opinions addressed to a single person;

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7. Examinations designed to test the aptitude, abilities, or knowledge of the persons tested and the collection of information for identification or classification in connection with such examinations;
8. Facts or opinions obtained or solicited at or in connection with public hearings or meetings;
9. Facts or opinions obtained or solicited through nonstandardized follow-up questions designed to clarify responses to approved collections of information; and
10. Like items so designated by OMB (5 CFR 1320.3(h)).

Infrastructure. Infrastructure the forest manages includes all vertical and horizontal constructed structures. Infrastructure is broken into three categories:

1. Transportation infrastructure includes both the road and trail systems. The road system infrastructure is all forest roads, drainage ditches, culverts, signage, and bridges. The trail system includes all motorized and non-motorized trails, signage, and bridges.
2. Facilities infrastructure includes administrative and recreation building and sites (e.g., driveways, parking, landscaping); support utilities (e.g., electrical, water, wastewater); dams, and other support buildings.
3. Other infrastructure directly supports natural resources, which includes fish barriers, wildlife drinkers, and range infrastructure (e.g., fencing, trick tanks, water gaps, cattleguards).

Inherent capability of the forest. The ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural disturbances (36 CFR 219.19).

Inholding. Private property completely surrounded by National Forest System lands.

Integrated resource management. Multiple use management that recognizes the interdependence of ecological resources and is based on the need for integrated consideration of ecological, social, and economic factors (36 CFR 219.19).

Intermittent stream. A stream or reach of stream channel that flows, in its natural condition, only during certain times of the year or in several years, and is characterized by interspersed, permanent surface water areas containing aquatic flora and fauna adapted to the relatively harsh environmental conditions found in these types of environments. Intermittent streams are identified as dashed blue lines on USGS 7 1/2-inch quadrangle maps.

Invasive species. An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. A species that causes, or is likely to cause, harm and that is exotic to the ecosystem it has infested. Invasive species infest both aquatic and terrestrial areas and can be identified within any of the following four taxonomic categories: Plants, Vertebrates, Invertebrates, and Pathogens (Executive Order 13112).

Jackstrawing. Groups of fallen trees usually resulting from blowdown, avalanche, flood, or insect or disease mortality.

Land grant-merced. A grant of land made by the Government of Spain or of Mexico to a community, town, colony, pueblo, or person for the purpose of founding or establishing a community, town, colony, or pueblo.

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Land grant-merced governing body. A community land grant-merced recognized under a State of New Mexico law, statute, or code, with a duly elected or appointed governance body charged with management, care and protection of land grant-merced common lands.

Landscape. A defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area (36 CFR 219.19).

Line officer. A Forest Service official who serves in a direct line of command from the Chief (36 CFR 219.62).

Long-term impacts. Impacts that last through the life of this plan.

Maintain. In reference to an ecological condition: To keep in existence or continuance of the desired ecological condition in terms of its desired composition, structure, and processes. Depending upon the circumstance, ecological conditions may be maintained by active or passive management or both (36 CFR 219.19).

Management actions. Any alterations to ecosystems or activities that the Forest Service conducts or authorizes on NFS lands. These may include mechanical thinning, prescribed burning, permitted grazing, permitted fuelwood gathering, vehicular access, stream restoration treatments, seeding, trail construction, fencing, among others.

Management area. A land area identified within the planning area that has the same set of applicable plan components. A management area does not have to be spatially contiguous (36 CFR 219.19).

Management system. For the purposes of the land management planning regulation at 36 CFR 219, a timber management system including even aged management and uneven-aged management (36 CFR 219.19).

Memorandum of understanding (MOU). Describes a bilateral or multilateral agreement between two or more parties. It expresses a convergence of will between the parties, indicating an intended common line of action. It is often used in cases where parties either do not imply a legal commitment or in situations where the parties cannot create a legally enforceable agreement. It is a more formal alternative to a gentlemen's agreement.

Minimum requirements analysis. Required by law whenever land managers are considering a use prohibited by Section 4(c) of the Wilderness Act of 1964, and is a process that was developed by the Arthur Carhart National Wilderness Training Center to help land managers make informed, defensible decisions that comply with the Wilderness Act.

Mitigate. To avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

Mollisol. A soil of an order comprising temperate grassland soils with dark, humus-rich surface layer containing high concentration of calcium and magnesium.

Monitoring. A systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships (36 CFR 219.19).

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Motor Vehicle. Any vehicle which is self-propelled, other than:

1. A vehicle operated on rails; and
2. Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility-impaired person for locomotion, and that is suitable for use in an indoor pedestrian area (36 CFR 212.1, 36 CFR 261.2).

Motor Vehicle Use Map (MVUM). A map reflecting designated roads, trails, and areas on an administrative unit or a ranger district of the National Forest System (36 CFR 212.1).

Multiple use. The management of all the various renewable surface resources of the NFS so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output, consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531) (36 CFR 219.19).

National Environmental Policy Act (NEPA). A United States environmental law (42 U.S.C. 4321 et seq.), enacted January 1, 1970 that established a U.S. national policy promoting the enhancement of the environment and "will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation". Additionally, it established the President's Council on Environmental Quality (CEQ).

National Forest System. Includes National Forests, National Grasslands, and the National Tallgrass Prairie (36 CFR 219.62).

National Forest System Road. A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority (36 CFR 212.1, 36 CFR 251.51, 36 CFR 261.2).

National Forest System Trail. A forest trail other than a trail which has been authorized by a legally documented right-of-way held by a State, county or other local public road authority (36 CFR 212.1).

Native species. An organism that was historically or is present in a particular ecosystem as a result of natural migratory or evolutionary processes and not as a result of an accidental or deliberate introduction into that ecosystem. An organism's presence and evolution (adaptation) in an area are determined by climate, soil, and other biotic and abiotic factors (36 CFR 219.19).

Natural variability. Is a reference to past conditions and processes that provide important context and guidance relevant to the environments and habitats in which native species evolved. Disturbance driven spatial and temporal variability is vital to ecological systems. Biologically appropriate disturbances provide for heterogeneous conditions and subsequent diversity. Conversely, "uncharacteristic disturbance", such as high-intensity fire in plant communities that

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historically had a frequent low intensity fire regime can have the effect of reducing diversity, increasing homogeneity, and may result in permanently altered conditions.

Neonate ungulate. Offspring of a hoofed animal (e.g., fawn or calf).

Objective. A concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets.

Off-highway vehicle (OHV). Any motorized vehicle designed for or capable of cross county travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain; except that term excludes (A) any registered motorboat, (B) any fire, military, emergency or law enforcement vehicle when used for emergency purposes, and any combat or combat support vehicle when used for national defense purposes, and (C) any vehicle whose use is expressly authorized by the respective agency head under a permit, lease, license, or contract (EO 116-44 as amended by EO 11989). See also FSM 2355. 01 - Exhibit 01.

Old growth characteristics. Old-growth forests are forests that have accumulated specific characteristics related to tree size, canopy structure, snags and woody debris and plant associations. Ecological characteristics of old-growth forests emerge through the processes of succession. Certain features - presence of large, old trees, multilayered canopies, forest gaps, snags, woody debris, and a particular set of species that occur primarily in old-growth forests - do not appear simultaneously, nor at a fixed time in stand development. Old-growth forests support assemblages of plants and animals, environmental conditions, and ecological processes that are not found in younger forests (younger than 150-250 years) or in small patches of large, old trees. Specific attributes of old-growth forests develop through forest succession until the collective properties of an older forest are evident.

Online. Refers to the appropriate Forest Service Website or future electronic equivalent (36 CFR 219.62).

Outstanding natural resource water (ONRW). Streams, lakes and wetlands that receive special protection against degradation under New Mexico's water quality standards and the federal Clean Water Act. They are designated by the Water Quality Control Commission. Waters eligible for ONRW designation include waters that are part of a national or state park, wildlife refuge or wilderness areas, special trout waters, waters with exceptional recreational or ecological significance, and high quality waters that have not been significantly modified by human activities (NMED 2015).

Outstandingly Remarkable Value. A scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar river-related value that is unique, rare, or exemplary feature and is significant when compared with similar values from other rivers at a regional or national scale.

Participation. Activities that include a wide range of public involvement tools and processes, such as collaboration, public meetings, open houses, workshops, and comment periods (36 CFR 219.19).

Perennial stream. A stream or reach of a channel that flows continuously or nearly so throughout the year and whose upper surface is generally lower than the top of the zone of

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saturation in areas adjacent to the stream. These streams are identified as solid blue on the USGS 7 1/2-inch quadrangle maps.

Permit area. Area in which an activity is authorized through a special use permit.

Permit holder or permittee. Any person or entity that has been issued a grazing or special use permit on NFS lands.

Persistence. Continued existence (36 CFR 219.19).

Piscicide. A chemical substance which is poisonous to fish. The primary use for piscicides is to eliminate a dominant species of fish in a body of water, as the first step in attempting to populate the body of water with a different fish.

Plan or land management plan. A document or set of documents that provide management direction for an administrative unit of the NFS developed under the requirements of the land management planning regulation at 36 CFR part 219 or a prior planning rule (36 CFR 219.19).

Plan area. The NFS lands covered by a plan (36 CFR 219.19), specifically lands managed by the Forest Service as the Carson NF.

Plan components. The parts of a land management plan that guide future project and activity decision-making. Specific plan components may apply to the entire plan area, to specific management areas or geographic areas, or to other areas as identified in the plan. Every plan must include the following plan components: Desired conditions; Objectives; Standards; Guidelines; Suitability of Lands. A plan may also include Goals as an optional component.

Plan development. The second phase in the forest plan revision process. Plan development follows the NEPA process and plan revision requires preparation of an environmental impact statement (EIS). It is grounded in the information developed during the assessment phase and other information relevant to the plan area, it addresses needs for change, and it involves the public. Every plan must have management areas or geographic areas or both and may identify designated or recommended designated areas (36 CFR 219.7).

Plan monitoring program. An essential part of the land management plan that sets out the plan monitoring questions and associated indicators, based on plan components. The plan monitoring program informs management of resources on the plan area and enables the Responsible Official to determine if a change in plan components or other plan content that guide management of resources on the plan area may be needed.

Plant and animal community. A naturally occurring assemblage of plant and animal species living within a defined area or habitat (36 CFR 219.19).

Productivity. The capacity of NFS lands and their ecological systems to provide the various renewable resources in certain amounts in perpetuity. For the purposes of the land management planning regulation at 36 CFR part 219 and this Handbook, productivity is an ecological term, not an economic term (36 CFR 219.19).

Project. An organized effort to achieve an outcome on NFS lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 CFR 219.19).

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Proper functioning condition (PFC). PFC is a methodology for assessing the physical functioning of riparian and wetland areas. The term PFC is used to describe both the assessment process, and a defined, on-the-ground condition of a riparian-wetland area. In either case, PFC defines a minimum or starting point.

Proposed species. Any species of fish, wildlife, or plant that is proposed by the U. S. Fish and Wildlife Service or the National Marine Fisheries Service in the Federal Register to be listed under Section 4 of the Endangered Species Act. (36 CFR 219.19)

Rangelands. Forage-producing forested and non-forested lands.

Recovery. For the purposes of the land management planning regulation at 36 CFR part 219 and with respect to threatened or endangered species: The improvement in the status of a listed species to the point at which listing as federally endangered or threatened is no longer appropriate (36 CFR 219.19).

Recreation opportunity. An opportunity to participate in a specific recreation activity in a particular recreation setting to enjoy desired recreation experiences and other benefits that accrue. Recreation opportunities include non-motorized, motorized, developed, and dispersed recreation on land, water, and in the air (36 CFR 219.19).

Recreation setting. The social, managerial, and physical attributes of a place that, when combined, provides a distinct set of recreation opportunities. The Forest Service uses the recreation opportunity spectrum to define recreation settings and categorize them into six distinct classes: primitive, semi-primitive non-motorized, semi-primitive motorized, roaded natural, rural, and urban (36 CFR 219.19).

Redundancy. The presence of multiple occurrences of ecological conditions such that not all occurrences may be eliminated by a catastrophic event.

Reference conditions. Environmental conditions that infer ecological sustainability. When available, reference conditions are represented by the characteristic natural range of variation (NRV) (not the total range of variation), prior to European settlement and under the current climatic period. For many ecosystems, NRV also reflects human-caused disturbance and effects prior to settlement. It may also be necessary to refine reference conditions according to contemporary factors (e.g., invasive species) or projected conditions (e.g., climate change). Reference conditions are most useful as an inference of sustainability when they have been quantified by amount, condition, spatial distribution, and temporal variation.

Regulated timber harvest. Tree harvest for the purposes of timber production, as opposed to tree harvest for other purposes, such as habitat and watershed improvement or fuelwood.

Representativeness. The presence of a full array of ecosystem types and successional states, based on the physical environment and characteristic disturbance processes.

Resilience. The ability of an ecosystem and its component parts to absorb, or recover from the effects of disturbances through preservation, restoration, or improvement of its essential structures and functions and redundancy of ecological patterns across the landscape.

Responsible official. The official with the authority and responsibility to oversee the planning process and to approve a plan, plan amendment, and plan revision (36 CFR 219.62).

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Restoration, ecological. The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions (36 CFR 219.19).

Restore. To renew by the process of restoration. See restoration (36 CFR 219.19).

Riparian areas. Three-dimensional ecotones [the transition zone between two adjoining communities] of interaction that include terrestrial and aquatic ecosystems that extend down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at variable widths (36 CFR 219.19).

Riparian management zone.

Risk. A combination of the likelihood that a negative outcome will occur and the severity of the subsequent negative consequences (36 CFR 219.19).

Road. A motor vehicle route over 50 inches wide, unless identified and managed as a trail (36 CFR 212.1).

Road Maintenance Levels (ML):

- ML1. Roads that are closed to vehicular traffic intermittently for periods that exceed 1 year. Can be operated at any other maintenance level during periods of use.
- ML2. Roads that are open and maintained for use by high-clearance vehicles; surface smoothness is not a consideration. Most have native material surface (not paved and no aggregate surface).
- ML3. Roads that are open and maintained for use by standard passenger cars. Most have gravel surface.
- ML4. Roads that are open and maintained for use by standard passenger cars and to provide a moderate degree of user comfort and convenience at moderate travel speeds. Most are paved or have an aggregate surface.
- ML5. Roads that are open and maintained for use by standard passenger cars

Routine maintenance. Work that is planned to be accomplished on a continuing basis, generally annually or more frequently (FSH 7709.58, 13.41).

Scenery Management System. A classification system that recognizes scenery as the visible expression of dynamic ecosystems functioning within “places”, which have unique aesthetic and social values. It recognizes that in addition to naturally occurring features, positive scenery attributes associated with social, cultural, historical, and spiritual values, including human presence and the built environment, can also be valued elements of the scenery. The SMS also allows for “seamless” analysis and conservation beyond National Forest System lands into adjacent communities and other jurisdictions, through the application of varying scenery “themes” within a single analysis. It is structured to emphasize "natural appearing” scenery.

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Scenic character. A combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place. Scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity (36 CFR 219.19).

Scenic integrity objective. A desired level of excellence based on physical and sociological characteristics of an area. Refers to the degree of acceptable alterations to the valued attributes of the characteristic landscape. Objectives include Very High, High, Moderate, and Low.

Seral state. One of a series of transitional plant communities that develop during gradual successive change following disturbance.

Species of conservation concern. A species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 CFR 219.9(c)).

Standard. A mandatory constraint on project and activity decision-making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

Stressors. For the purposes of the land management planning regulation at 36 CFR part 219, factors that may directly or indirectly degrade or impair ecosystem composition, structure, or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime (36 CFR 219.19).

Sustainability. The capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs. For the purposes of the land management planning regulation at 36 CFR part 219 and this Handbook ‘‘ecological sustainability’’ refers to the capability of ecosystems to maintain ecological integrity; ‘‘economic sustainability’’ refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits; and ‘‘social sustainability’’ refers to the capability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and support vibrant communities (36 CFR 219.19).

Sustainable rangelands. Lands that provide forage for livestock grazing opportunities and contribute to agricultural businesses, local employment, as well as traditional lifestyles and generational ties to the land.

Sustainable recreation. The set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations (36 CFR 219.19).

Sub-watershed. A HUC 12 hydrologic unit, the smallest subdivision considered in this assessment.

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Temporary road. A road authorized by contract, permit, lease, other written authorization or emergency operation not intended to be part of the forest transportation system and not necessary for long-term management (36 CFR 212.1).

Temporary trail. A trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest trail and that is not included in a forest transportation atlas.

Terrestrial ecosystem. All interacting organisms and elements of the abiotic environment in those vegetation and soil types, which are neither aquatic nor riparian.

Terrestrial ecosystem survey (TES). An inventory of soil types or terrestrial ecosystem units (TEUs) on the Carson NF. It contains predictions and limitations of soil and vegetation behavior for selected land uses. This survey also highlights hazards or capabilities inherent in the soil and the impact of selected uses on the environment. At the context scale, upland ecological response units are derived from the Carson NF Terrestrial Ecosystem Survey (USDA FS Carson 1987).

Terrestrial ecosystem unit (TEU). The classification unit used in the Terrestrial Ecosystem Survey (TES). A spatially explicit area with a similar combination of soils, land types, and vegetation c Threatened species. Any species that the Secretary of the Interior or the Secretary of Commerce has determined is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Threatened species are listed at 50 CFR sections 17.11, 17.12, and 223.102.

Timber harvest. The removal of trees for wood fiber use and other multiple use purposes (36 CFR 219.19).

Timber production. The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 CFR 219.19).

Traditional community. A land-based rural community that has a long-standing history in and around the lands managed by the Forest Service.

Traditional cultural property (TCP). A property that is eligible for inclusion in the National Register of Historic Places (NRHP) based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community.

Tribal consultation. The timely, meaningful, and substantive dialogue between Forest Service officials who have delegated authority to consult, and the official leadership of federally recognized tribes, or their designated representatives, pertaining to USDA Forest Service policies that may have tribal implications.

Off-highway vehicle. A motor vehicle that is capable of driving on and off paved or gravel surface, including all-terrain vehicles (ATVs), utility task vehicles (UTVs), and motor cycles.

Ungulate. A hooved animal, which includes wildlife (e.g., pronghorn, deer, and elk) and domestic livestock (e. g., sheep, cattle, and horses).

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Upland. May refer to areas, species, systems, or conditions that are characteristic of terrestrial ecosystems, as opposed to riparian or aquatic ecosystems.

Vegetation structure. Both vertical and horizontal arrangement of vegetation. Horizontal structure may refer tree size, tree density, and to patterns of trees or groups of trees and their adjoining openings. Vertical structure may refer to the layers, appearance, and composition of vegetation between the ground and the top of the vegetation canopy and includes any grasses, forbs, shrubs, and trees.

Watershed. A region or land area drained by a single stream, river, or drainage network; a drainage basin (36 CFR 219.19). Specifically, a HUC 10 hydrologic unit, larger than a sub-watershed, and nested in a sub-basin.

Watershed condition. The state of a watershed based on physical and biogeochemical characteristics and processes (36 CFR 219.19).

Wetlands. A specific subtype within the Wetland Riparian group of vegetation communities. In wetlands saturation with water is the dominant factor determining the nature of soil development and plant and animal communities. “For regulatory purposes under the Clean Water Act, the term wetlands means ‘those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.’ [taken from the EPA Regulations listed at 40 CFR 230.3(t)].” (USEPA 2015) The Wetland Riparian vegetation community as defined in this plan is slightly more inclusive and includes open water wetlands and cienegas that may not be considered wetlands for regulatory purposes.

Wild and Scenic River. A river designated by Congress as part of the National Wild and Scenic Rivers System that was established in the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271 (note), 1271–1287) (36 CFR 219.19).

Wilderness. Any area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964 (16 U.S.C. 1131–1136) (36 CFR 219.19).

Wildland urban interface (WUI). That area where human development adjoins public or private natural areas, or an intermix of rural and urban land uses. From a natural resource perspective the wildland-urban interface is an area where increased human influence and land-use conversion are changing natural resource goods, services, and management techniques (Hermansen-Baez et al. 2009).

Woodland. Lands with over 10% tree canopy cover where the majority of the trees are non-timber species (e.g., piñon pine and juniper) not traditionally used for industrial wood products.

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USDA FS (US Department of Agriculture- Forest Service). 2015. National scenic and historic trails. http://www.fs.fed.us/recreation/programs/trails/nat_trails.shtml

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USDI FWS (United States Department of Interior- Fish and Wildlife Service). 2016. Endangered Species Act species and migratory birds list for Taos, Rio Arriba, Colfax, and Mora Counties. Albuquerque, NM: USDI Fish and Wildlife Service.

US EPA (United States Environmental Protection Agency). 2015. Wetlands definitions http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm (5/14/15)

2SDA Forest Service Civil Rights Compliance Review Report conducted by the Office of Compliance, Policy, Training and Cultural Transformation dated June 2013. The Report found that the CNF (Livestock Grazing Program) in: "Region 3 was non-compliant with several Civil Rights requirements; inconsistent implementation of USDA/FS regulations, procedures and other mandates.2"Examples: The Report identifies several program areas of noncompliance which includes at page 5, the process used in "Terminating or Suspending Grazing Permits".

3he Treaty of Guadalupe Hidalgo (1848)", was given effect both in the U.S. Kearny Code of Territorial NM and the NM Constitution which historically protects the grazing rights, stock water rights and associated financial investments in their practice as the "valid existing rights" of the native inhabitants of New Mexico. The right to graze on the public domain has been recognized by the courts and is considered a property right (1933 USDA Technical Bulletin 301 with Contents 115211). It further states " they own the lands and control the irrigation waters that are the keys to the use of practically all the grazing lands, they hold nearly all the grazing preferences in the national forests of their states, they have the most possessory rights on the public domain, they hold most of the stock-water allotments made under the laws of the state". In the Act of 1884, 23 Stat 103 the rancher not only owned the stock-water rights and stock trail ROWs, but had the preference right over all others to be granted the privilege (legal right) to graze cattle, horses, sheep and other livestock.

4ew Mexico State University Range Improvement Task Force (RITF Report 83): identifies that Forest Service Region 3 has lost approximately 80% (Aum's) of it Livestock Program.

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Appendix A. Forest Plan Maps

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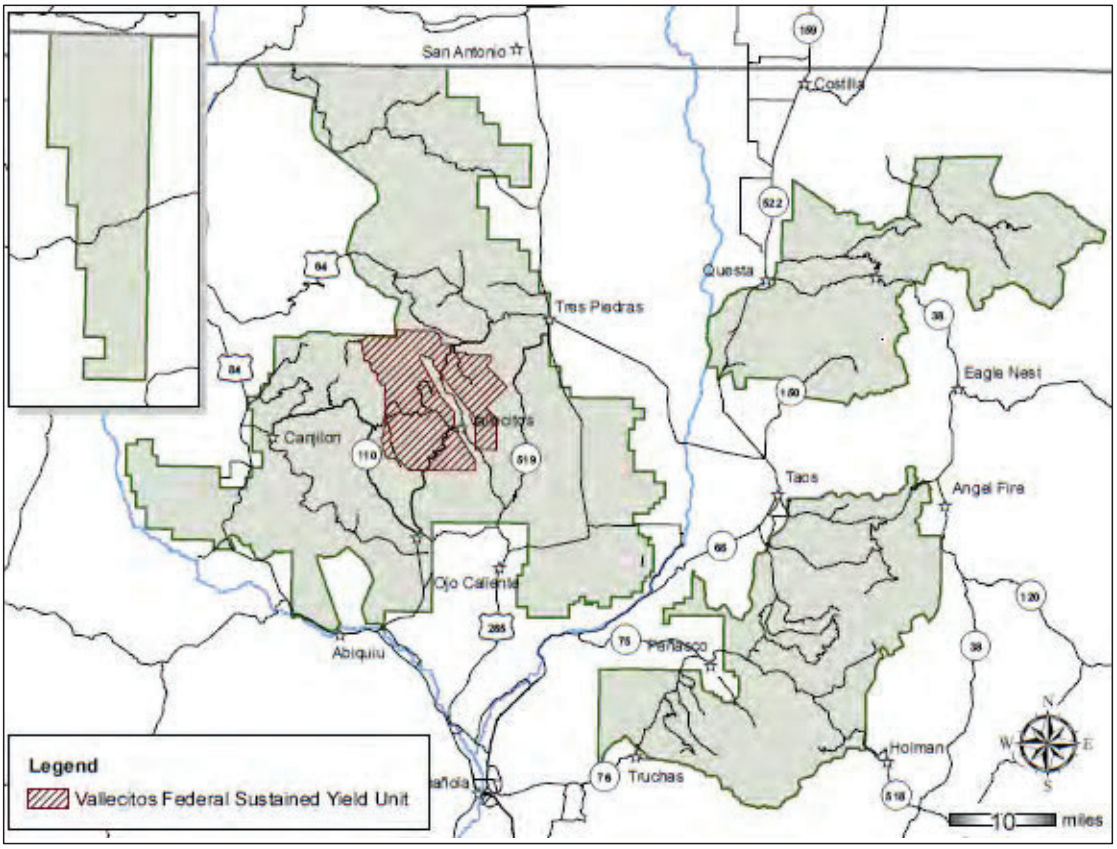

Figure 6. Vallecitos Federal Sustained Yield Unit (VFSYU), El Rito Ranger District

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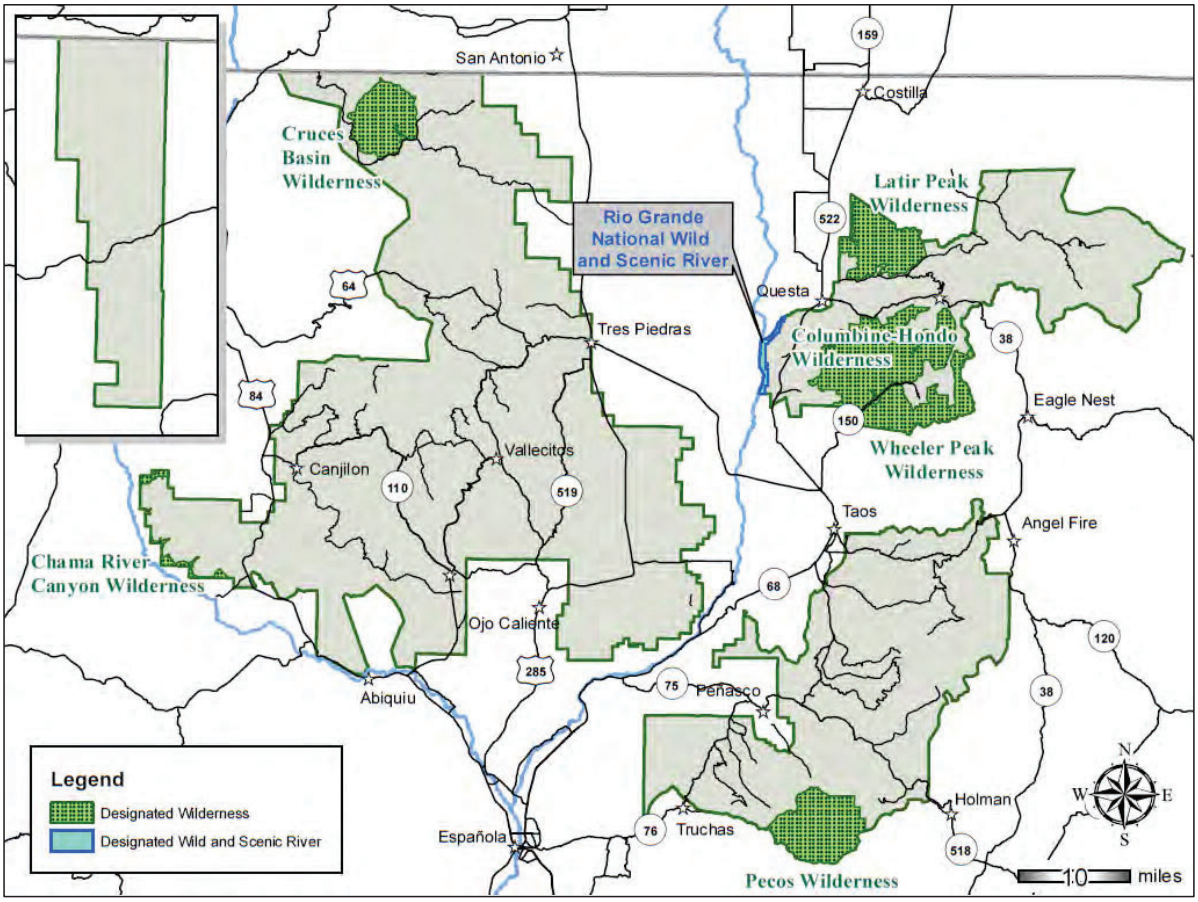

Figure 7. Designated Wilderness Areas (WILD) and Wild and Scenic Rivers (WSR) on the Carson NF

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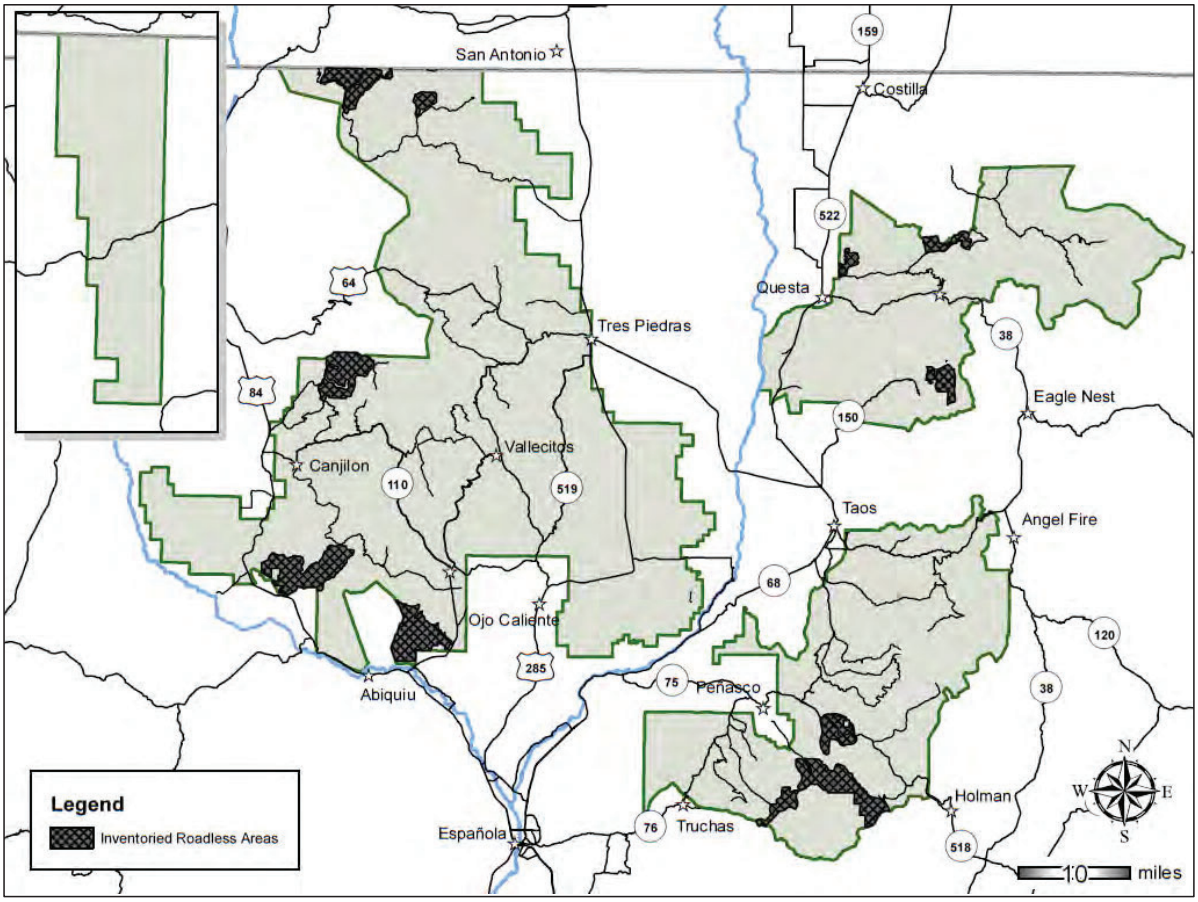

Figure 8. Inventoried Roadless Areas (IRA)

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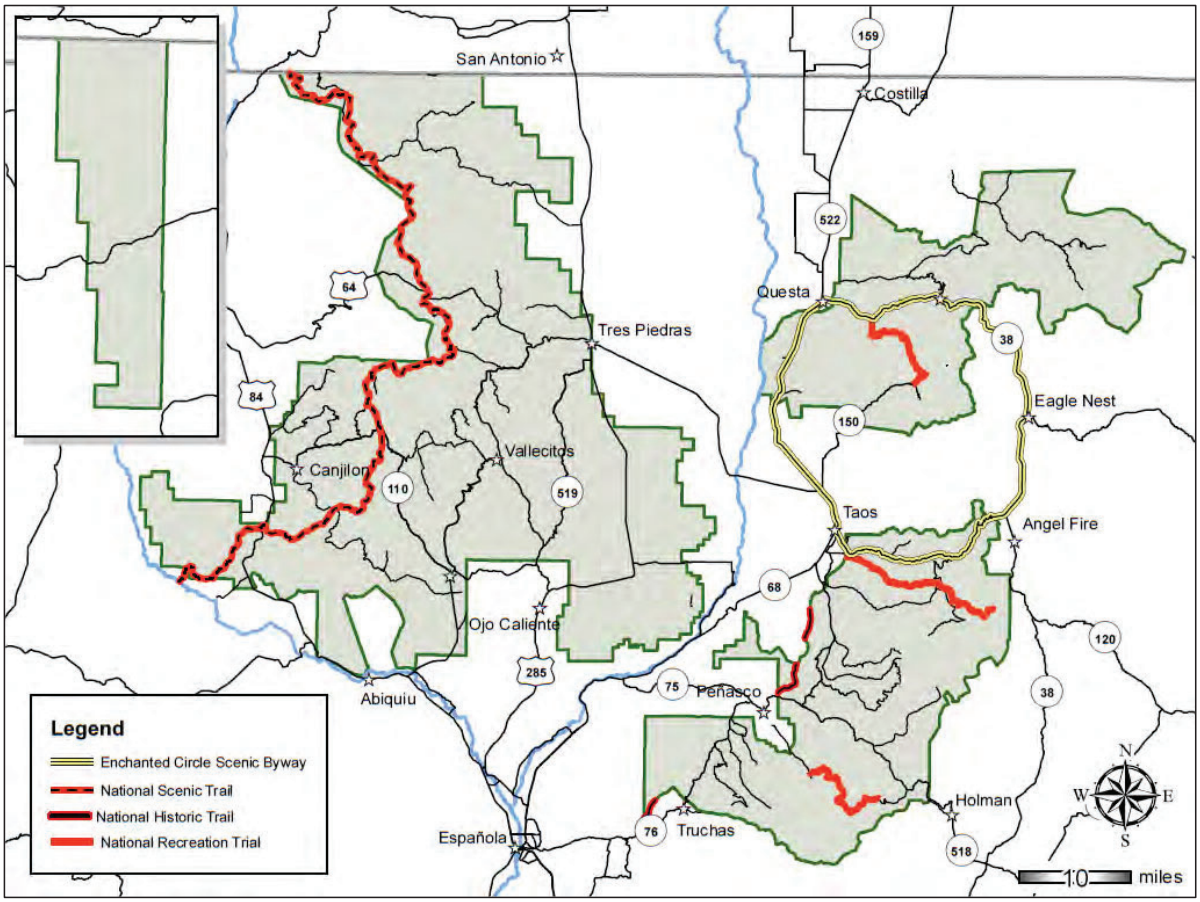

Figure 9. National Scenic, Historic, and Recreation Trails (NTRL) and National Scenic Byways (NSBW)

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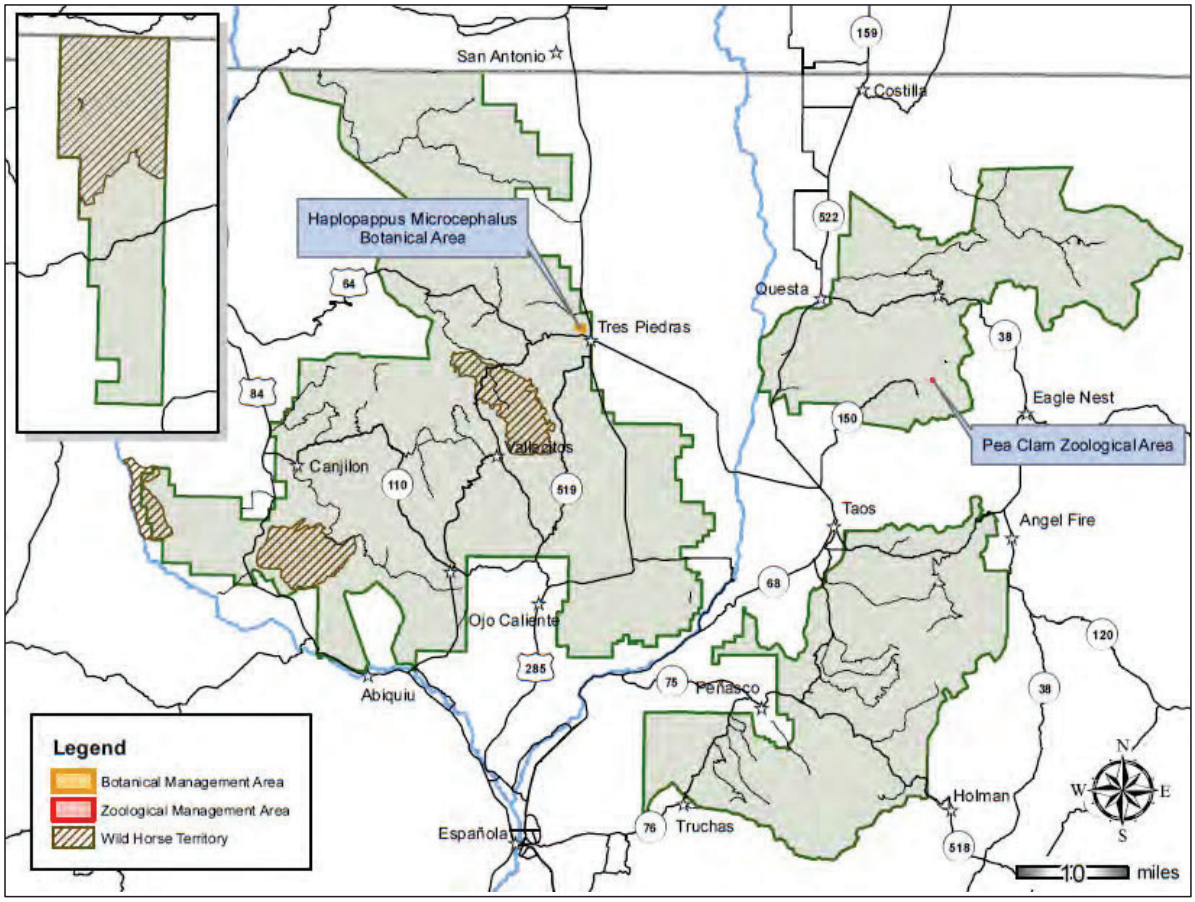

Figure 10. Designated Wild Horse Territories (WHT), Zoological (ZOO) and Botanical (BOT) Management Areas

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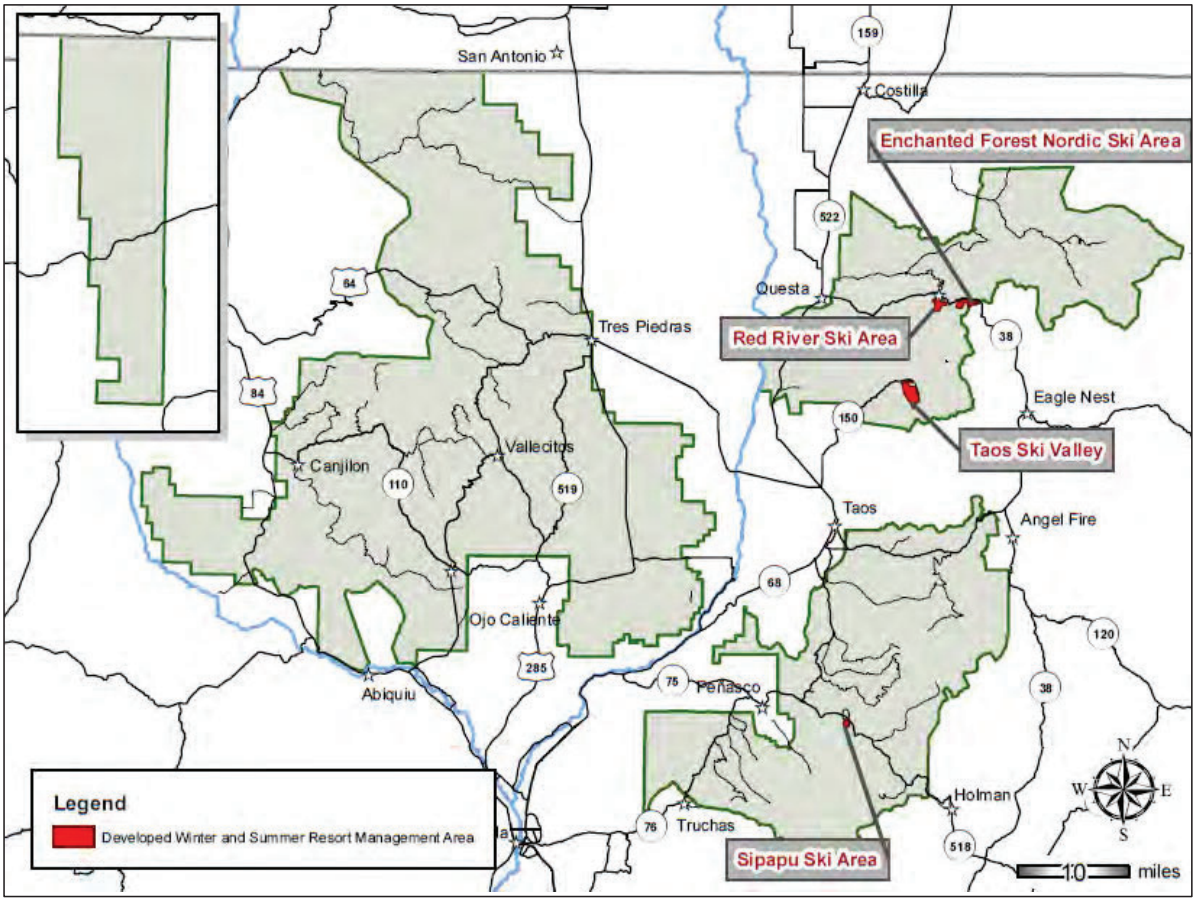

Figure 11. Proposed Developed Winter and Summer Resort Management Area (DEVRES)

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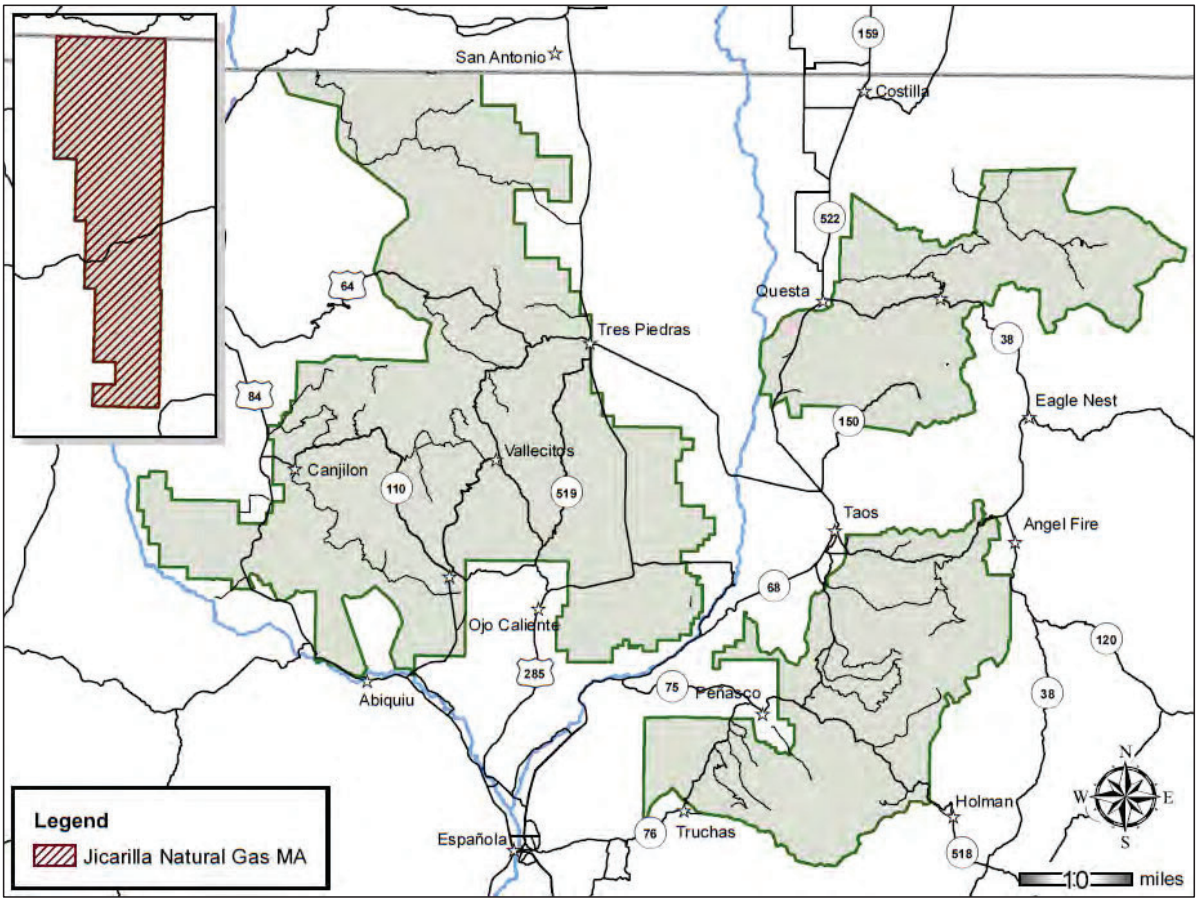

Figure 12. Proposed Jicarilla Natural Gas Management Area (JICMA)

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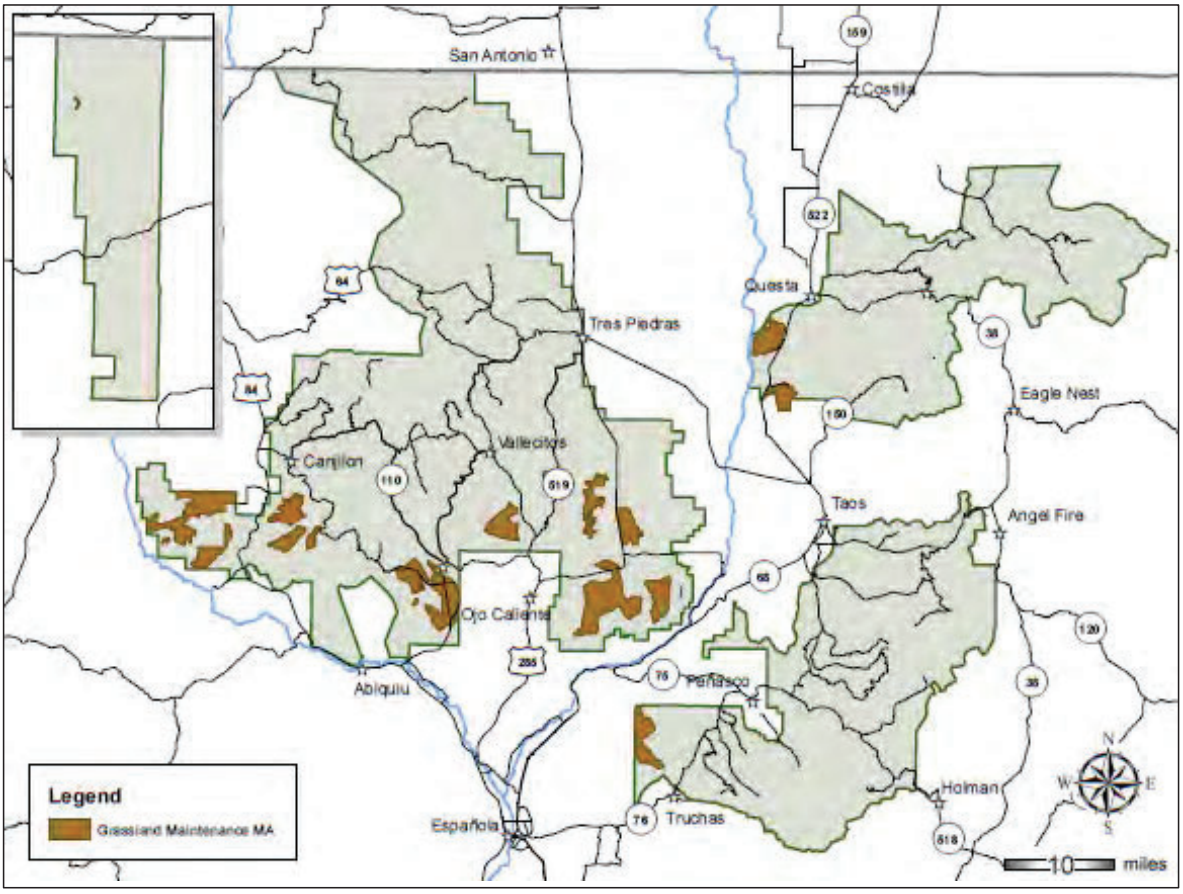

Figure 13. Proposed Grassland Maintenance Management Area (GMMA)

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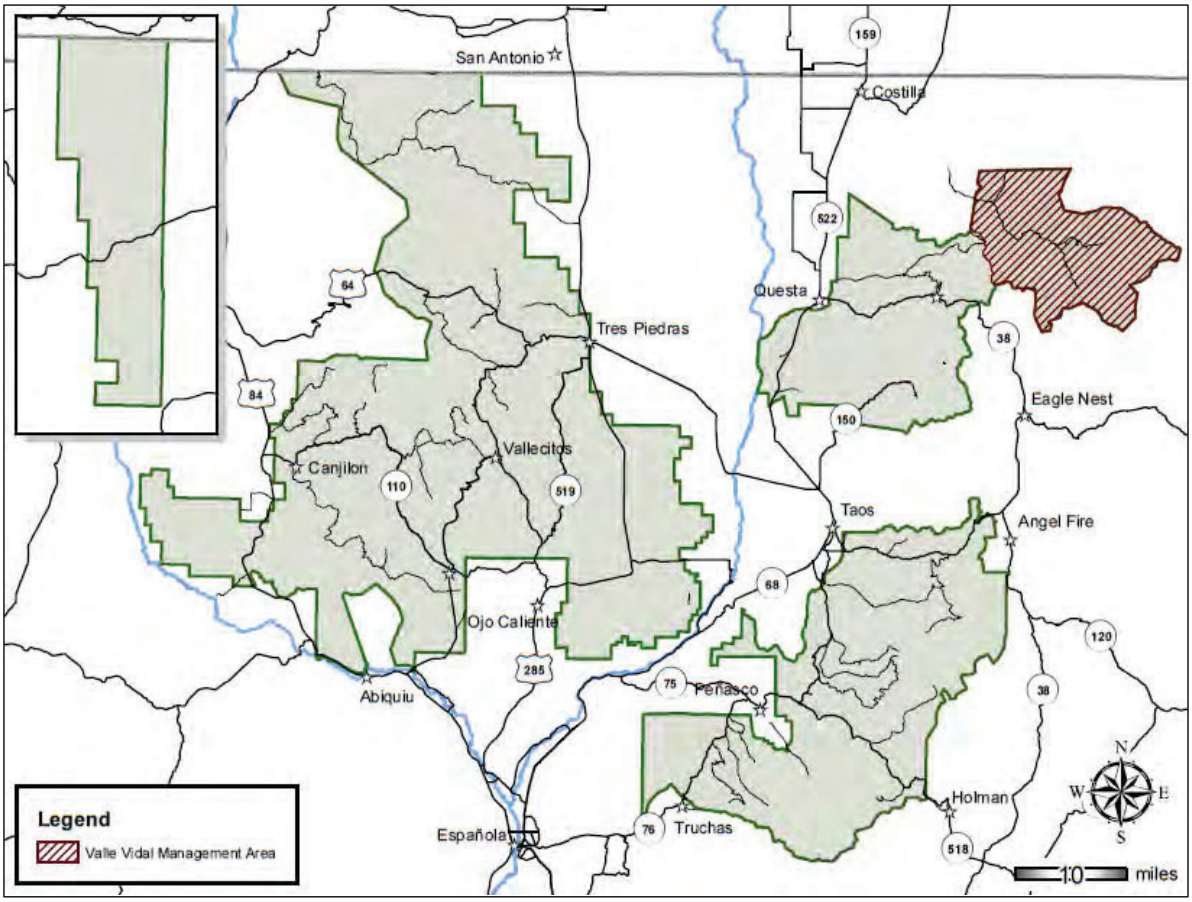

Figure 14. Proposed Valle Vidal Management Area (VVMA)

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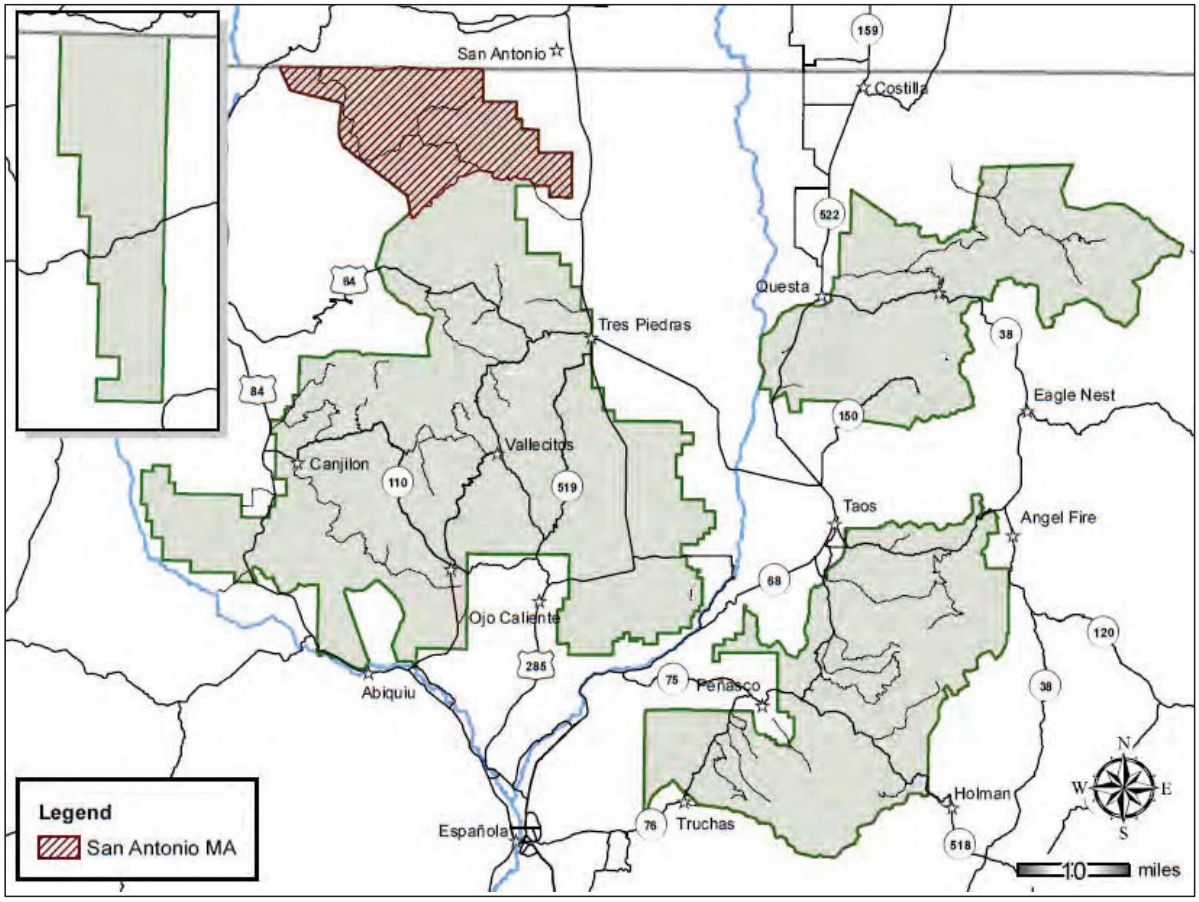

Figure 15. Proposed San Antonio Management Area (SAMA)

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Appendix B. Lands Suitable for Timber Production

This section will outline how timber suitability is calculated for the proposed draft plan.

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Appendix C. Relevant Laws, Regulation, and Policy

The operating environment for managing NFS lands comes from a variety of sources. This appendix contains a partial listing of relevant statutes, regulations, policies, and agreements that provide management direction but are not restated in this plan. Carson NF develops projects and activities to be consistent with the direction found in the plan, as well as applicable laws, regulations, and executive orders. Other relevant sources that provide varying levels of guidance include Forest Service Handbooks and Manuals, programmatic agreements, memoranda of understanding, memoranda of agreement, and existing decisions.

Federal Statutes

The following is a partial list of relevant laws which have been enacted by Congress. A Federal statute, or law, is an act or bill which has become part of the legal code through passage by Congress and approval by the President (or via congressional override). Although not specified below, many of these laws have been amended.

American Indian Religious Freedom Act (AIRFA) as amended (42 U.S.C. 1996)

Protects and preserves for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use, and possession of sacred objects and the freedom to worship through ceremonial and traditional rites.

Americans with Disabilities Act of 1990

Provides a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities; for clear, strong, consistent, and enforceable standards addressing discrimination against individuals with disabilities; to ensure that the Federal Government plays a central role in enforcing the standards established in this act on behalf of individuals with disabilities; and to invoke the sweep of congressional authority, including the power to enforce the fourteenth amendment and to regulate commerce, in order to address the major areas of discrimination faced by people with disabilities.

Anderson-Mansfield Reforestation and Revegetation Act of October 11, 1949

Provides for the reforestation and revegetation of National Forest System lands and other lands under the administration or control of the Forest Service.

Antiquities Act of 1906 (16 U.S.C. 431-433)

Prevents the appropriation, excavation, injury, or destruction of any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the United States, without permission. Provides for permits, for misdemeanor-level penalties for unauthorized use, and authorizes the President to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon lands owned or controlled by the United States to be national

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monuments, and to reserve as a part thereof parcels of land needed for the proper care and management of the objects to be protected. The Archaeological Resources Protection Act has replaced the Antiquities Act as the authority for special use permits if the resource involved is 100-years old or greater.

Archaeological and Historic Preservation Act of 1974 (AHPA) (16 U.S.C. 469)

This act is also known as the Archaeological Recovery Act. AHPA amended and expanded the Reservoir Salvage Act of 1960 and was enacted to complement the Historic Sites Act of 1935 by providing for the preservation of significant scientific, historical, and archaeological data which might be lost or destroyed as the result of the construction of a federally authorized dam or other construction activity. AHPA also allows for any Federal agency responsible for a construction project to appropriate a portion of project funds for archaeological survey, recovery, analysis, and publication of results.

Archaeological Resources Protection Act of 1979 as amended (ARPA) (16 U.S.C. 470 aa et seq.)

The act establishes permit requirements for removal or excavation of archaeological resources from Federal and Indian lands. Provides criminal and civil penalties for the unauthorized excavation, removal, damage, alteration, defacement, or the attempted unauthorized removal, damage, alteration, or defacement of any archaeological resource more than 100 years of age found on Federal or Indian lands. Prohibits the sale, purchase, exchange, transportation, receipt, or offering of any archaeological resource obtained from public lands or Indian lands. The act further directs Federal land managers to survey land under their control for archaeological resources and create public awareness programs concerning archaeological resources.

Bald and Golden Eagle Protection Act of 1940, as amended

The act prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald and golden eagles, including their parts, nests, or eggs. The act defines “take” as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.” Disturbance includes impacts that result from human-induced alterations in the nesting area even when eagles are not present. Sections 22.26—28 allow take of bald and golden eagles or their nests where it is unavoidable and where it is compatible with the continued preservation of the eagle. Permits for take are issued based on certain criteria such as, but not limited to, certifications, reporting, and monitoring.

Clean Air Act of August 7, 1977, as amended (1977 and 1990) 42 U.S.C. §7401 et seq. (1970)

Enacted to protect and enhance the quality of the Nation’s air resources; to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to state and local governments in connection with the development and execution of their air pollution prevention and control programs; and to encourage and assist the development and operation of regional air pollution prevention and control programs.

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Clean Water Act

(see Federal Water Pollution Control Act)

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Common Varieties of Mineral Materials Act of July 31, 1947

Authorizes the Secretaries of the Interior and Agriculture, under such rules and regulations as they may prescribe, to dispose of common variety mineral materials (including but not limited to sand, stone, gravel, pumice, pumicite, cinders, and clay) and vegetative materials (including but not limited to yucca, manzanita, mesquite, cactus, and timber or other forest products) on public lands of the United States, if the disposal of such materials is not otherwise expressly authorized by law, is not expressly prohibited by laws of the United States, and would not be detrimental to the public interest.

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Cooperative Forestry Assistance Act of July 1, 1978

Authorizes the Secretary of Agriculture to assist in the establishment of a coordinated and cooperative Federal, state, and local forest stewardship program for the management of non-Federal forest lands and forest lands in foreign countries.

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Emergency Flood Prevention Act (Agricultural Credit Act) of August 4, 1978

Authorizes the Secretary of Agriculture to undertake emergency measures for runoff retardation and soil erosion prevention, in cooperation with landowners and users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood, or other natural occurrence is causing or has caused a sudden impairment of that watershed.

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Endangered Species Act of 1973, as amended

Authorizes the determination and listing of species as endangered and threatened; prohibits unauthorized taking, possession, sale, and transport of endangered species; authorizes the assessment of civil and criminal penalties for violating the act or regulations; and, authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the act or any regulation issued thereunder. Section 7 of the act requires Federal agencies to use their authorities to carry out programs for the conservation of endangered and threatened species and to insure that any action authorized, funded, or carried out by them is not likely to jeopardize the continued existence of listed species or adversely modify their critical habitat.

Section 4 of the act directs the development and implementation of recovery plans for threatened and endangered species and the designation of critical habitat. Several species listed under the act are found on the Carson NF, some with recovery plans and some with designated critical habitat. Those with a recovery plan and/or a critical habitat designation are listed below:

Mexican Spotted Owl Recovery Plan

Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl; Final Rule

Final Recovery Plan Southwestern Willow Flycatcher

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Southwestern Willow Flycatcher; Final Rule

Black Footed Ferret Recovery Plan

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Energy Independence and Security Act of December 19, 2007

Reinforces the energy reduction goals for federal agencies put forth in Executive Order 13423, as well as introduces more aggressive requirements. The three key provisions enacted are the Corporate Average Fuel Economy Standards, the Renewable Fuel Standard, and the appliance/lighting efficiency standards.

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Energy Policy Act of 2005

Requires the Secretary of Agriculture to ensure timely action on oil and gas permits, improve collection and retrieval of oil and gas information, and improve inspection and enforcement of permit terms (Section 362).

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Energy Security Act of June 30, 1980

Authorizes the Secretary of Agriculture to make available timber resources of the National Forest System, in accordance with appropriate timber appraisal and sale procedures, for use by biomass energy projects.

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Federal Advisory Committee Act of October 6, 1972

Sets standards and uniform procedures to govern the establishment, operation, administration, and duration of advisory committees.

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Federal Cave Resources Protection Act of November 18, 1988

Established requirements for the management and protection of caves and their resources on Federal lands, including allowing land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on Federal lands.

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Federal Insecticide, Rodenticide, and Fungicide Act of October 21, 1972

Requires the administrator of the Environmental Protection Agency to prescribe standards for the certification of individuals authorized to use or supervise the use of any pesticide that is classified for restricted use; regulates the sale of restricted use pesticides; and provides penalties for the unauthorized use or sale of restricted use pesticides.

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Federal Land Policy and Management Act of October 21, 1976

Requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use. Also states that the United States shall receive fair market value of the use of the public lands and their resources unless otherwise provided for by law.

1 Both the Federal Land Management Policy Act (FLMPA) and National Forest Management Act (NFMA) of 1976 clearly protect all rights of property from encroachment by federal regulatory actions and plans. Both laws state" Any revision in present or future permit contracts, or other instruments shall be subject to valid existing rights'

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Federal Noxious Weed Act, 1974, as amended

Authorizes the Secretary of Agriculture to designate plants as noxious weeds by regulation; to prohibit the movement of all such weeds in interstate or foreign commerce except under permit; to inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds; and to cooperate with other Federal, state and local agencies, farmers associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds.

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Federal Water Pollution Control Act and Amendments of 1972 (Clean Water Act)

Enacted to restore and maintain the chemical, physical, and ecological integrity of the Nation's waters. Provides for measures to prevent, reduce, and eliminate water pollution; recognizes, preserves, and protects the responsibilities and rights of States to prevent, reduce, and eliminate pollution, and to plan the development and use (including restoration, preservation, and enhancement) of land and water resources; and provides for Federal support and aid of research relating to the prevention, reduction, and elimination of pollution, and Federal technical services and financial aid to state and interstate agencies and municipalities for the prevention, reduction, and elimination of pollution.

Established goals for the elimination of water pollution; required all municipal and industrial wastewater to be treated before being discharged into waterways; increased Federal assistance for municipal treatment plant construction; strengthened and streamlined enforcement policies; and expanded the Federal role while retaining the responsibility of states for day-to-day implementation of the law.

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Federal Water Project Recreation Act of July 9, 1965

Requires that recreation and fish and wildlife enhancement opportunities be considered in the planning and development of Federal water development.

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Fish and Wildlife Conservation Act of September 15, 1960

Requires the Secretaries of the Interior and Agriculture, in cooperation with state agencies, to plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game on public lands under their jurisdiction.

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Fish and Wildlife Coordination Act of March 10, 1934

Authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with other Federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The Act also authorizes the preparation of plans to protect wildlife resources, the completion of wildlife surveys on public lands, and the acceptance by Federal agencies of funds or lands for related purposes provided that land donations receive the consent of the state in which they are located.

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Food, Conservation & Energy Act of 2008

(2008 Farm Bill) Public Law 110-246 Title VIII – Forestry, Subtitle A, B, and C

Subtitle A: Amendment to the Cooperative Forestry Assistance Act of 1978. Establishes national priorities for private forest conservation, a community forest and open space conservation program, and a Secretary level forest resources coordinating committee.

Subtitle B: Cultural and Heritage Cooperation Authority. Authorizes the Secretary of Agriculture to provide forest products to Indian tribes for traditional and cultural purposes; to protect the confidentiality of certain information, including information that is culturally sensitive to Indian tribes; to utilize National Forest System land for the reburial of human remains and cultural items, including human remains and cultural items repatriated under the Native American Graves Protection and Repatriation Act; prevent the unauthorized disclosure of information regarding human remains or cultural items reburied on National Forest System land; to ensure access to National Forest System land, to the maximum extent practicable, by Indians and Indian tribes for traditional and cultural purposes; to increase the availability of Forest Service programs and resources to Indian tribes in support of the policy of the United States to promote tribal sovereignty and self-determination; and to strengthen support for the policy of the United States of protecting and preserving the traditional, cultural, and ceremonial rites and practices of Indian tribes, in accordance with the American Indian Religious Freedom Act (42 U.S.C. 1996).

Subtitle C: Amendments to Other Forestry Related Laws. Amends the Lacey Act to include the illegal taking of plants, establishes an Emergency Forest Restoration Program, and renews authority and funding for the Healthy Forest Reserve Program.

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Forest Highways Act of August 27, 1958

Requires that funds available for forest development roads and trails be used by the Secretary of Agriculture to pay for the costs of construction and maintenance thereof, including roads and Appendix D. Relevant Laws, Regulations, and Policies, and Other Sources of Information trails on experimental and other areas under Forest Service administration, or for adjacent vehicular parking areas and sanitary, water, and fire control facilities. Authorizes the Secretary of Agriculture to enter into contracts with a state or civil subdivision thereof, and issue such regulations, as he deems desirable. See also Highways (23 USC Chapter 205 Forest development roads and trails).

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Forest and Rangeland Renewable Resources Planning Act of August 17, 1974

Directs the Secretary of Agriculture to prepare a renewable resource assessment every 10 years; to transmit a recommended renewable resources program to the President every 5 years; to develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System; and to ensure that the development and administration of the resources of the National Forest System are in full accord with the concepts of multiple use and sustained yield.

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Freedom of Information Act of November 21, 1974

Governs which government records are released to the public either automatically or upon request.

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Healthy Forests Restoration Act of 2003 (H.R. 1904)

Purposes are to reduce wildfire risk to communities and municipal water supplies through collaborative hazardous fuels reduction projects; to assess and reduce the risk of catastrophic fire or insect or disease infestation; to enhance efforts to protect watersheds and address threats to forest and rangeland health (including wildfire) across the landscape; to protect, restore, and enhance forest ecosystem components such as biological diversity, threatened/endangered species habitats, and enhanced productivity.

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Historic Sites Act of 1935 (16 U.S.C. 461)

Establishes a policy to preserve for public use historic sites, buildings, and objects of national significance for the benefit of the people. Authorizes the National Park Service's National Historic Landmarks Program.

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Intergovernmental Cooperation Act of October 16, 1968 (31 USC 6505)

The act permits Federal agencies to provide specialized or technical services to state and local units of government.

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Land Acquisition Act of March 3, 1925

Authorizes the Secretary of Agriculture to purchase land for national forest headquarters, ranger stations, dwellings, or other sites required for the effective performance of the authorized activities of the Forest Service.

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Land and Water Conservation Fund Act of September 3, 1964

Authorizes the appropriation of funds for Federal assistance to states in planning, acquisition, and development of needed land and water areas and facilities and for the Federal acquisition and development of certain lands and other areas for the purposes of preserving, developing, and assuring accessibility to outdoor recreation resources.

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Migratory Bird Treaty Act of 1918

Makes it unlawful to "take" migratory birds, their eggs, feathers, or nests. A migratory bird is any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. Presidential executive order number 13186 additionally directs Federal agencies to integrate bird conservation into agency activities and to design migratory bird habitat and conservation principles and practices into agency environmental planning.

This page contains no comments

Mineral Leasing Act of February 25, 1920

Provides that the deposits of certain minerals on land owned by the United States shall be subject to lease to citizens of the United States, provided royalties on such deposits are paid to the United States.

This page contains no comments

Mining Claims Rights Restoration Act of August 11, 1955

States that all public lands belonging to the United States which have been withdrawn or reserved for power development or power sites shall be open to entry for location and patent of mining claims and mineral development, subject to certain conditions.

This page contains no comments

Mining and Minerals Policy Act of December 31, 1970

States that it is the policy of the Federal Government to foster and encourage the development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries; the orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help assure satisfaction of industrial, security, and environmental needs; mining, mineral, and metallurgical research to promote the wise and efficient use of our natural and reclaimable mineral resources; and the study and development of methods for the disposal, control, and reclamation of mineral waste products and the reclamation of mined land.

This page contains no comments

Multiple-Use Sustained-Yield Act of June 12, 1960

States that it is the policy of Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and authorizes and directs the Secretary of Agriculture to develop and administer the renewable surface resources of the national forests for the multiple use and sustained yield of products and services.

This page contains no comments

National Environmental Policy Act of January 1, 1970

Directs all Federal agencies to consider and report the potential environmental impacts of proposed Federal actions and established the Council on Environmental Quality.

National Environmental Protection Act (NEPA) (P.L. 91-190.
See specifically: Title 1, Sec.101, (b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may –
(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice:

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities:).

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Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:08:28 AM
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National 1990 Farm Bill (Title XII – Forest Stewardship Act) Act of November 28, 1990

Directs the Secretary of Agriculture to establish a competitive forestry, natural resources, and environmental grants program, and provides for other research programs.

This page contains no comments

National Forest Management Act of October 22, 1976

The National Forest Management Act reorganized, expanded, and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest System lands. The National Forest Management Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of national forests.

This page contains no comments

National Forest Roads and Trails Act of October 13, 1964

Authorizes the Secretary of Agriculture to provide for the acquisition, construction, and maintenance of forest development roads within and near the national forests through the use of appropriated funds, deposits from timber sale purchasers, cooperative financing with other public agencies, or a combination of these methods. The act also authorizes the secretary to grant rights-of-way and easements over National Forest System lands.

This page contains no comments

National Historic Preservation Act of 1966 as amended (NHPA) (16 U.S.C. 470)

Sets forth the Federal Government's policy to preserve and protect historical and cultural resources. This act states that the historical and cultural foundations of the Nation should be preserved as a living part of the Nation's community life and development in order to give a sense of orientation to the American people. Directs all Federal agencies to take into account the effects of their undertakings (actions, financial support, and authorizations) on properties included in or eligible for the National Register. Establishes inventory, nomination, protection, and preservation responsibilities for federally owned historic properties. As amended extends the policy in the Historic Sites Act to State and local historical sites as well as those of national significance, expands the National Register of Historic Places, establishes the Advisory Council on Historic Preservation and the State Historic Preservation Officers, and requires agencies to designate Federal preservation officers. Establishes criteria for designating tribal historic preservation officers to assume the functions of a state historic preservation officer on tribal lands.

This page contains no comments

National Trails System Act of October 2, 1968 (16 U.S.C.1241-1251)

Created a series of National trails "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." The Act and its subsequent amendments authorized a national system of trails and defined four categories of national trails. National Scenic Trails (NST) provide outdoor recreation and the conservation and enjoyment of significant scenic, historic, natural, or cultural qualities; National Historic Trails (NHT) follow travel routes of national historic significance; National Recreation Trails (NRT) are in, or reasonably accessible to, urban areas on federal, state, or private lands; and Connecting or Side Trails provide access to or among the other classes of trails.

This page contains no comments

Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 USC 3001)

Provides a process for Federal agencies to return Native American human remains, funerary objects, and sacred objects to the ancestors and appropriate Native American tribe. Includes provisions for the intentional excavation and unanticipated discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking. The act requires agencies to identify holdings of such remains and objects and to work with appropriate Native American groups toward their repatriation.

This page contains no comments

Oil and Gas Leasing Reform Act of 1987

Amended the Mineral Lands Leasing Act of 1920 regarding competitive leasing of oil and gas for onshore Federal lands. Sets forth guidelines for the promulgation of regulations regarding lease sales, and prohibits the issuance of oil or gas leases upon certain lands allocated or designated as wilderness areas.

This page contains no comments

Organic Administration Act of June 4, 1897

Authorizes the President to modify or revoke any instrument creating a national forest; states that no national forest may be established except to improve and protect the forest within its boundaries, for the purpose of securing favorable conditions of waterflows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Authorizes the Secretary of Agriculture to promulgate rules and regulations to regulate the use and occupancy of the national forests.

This page contains no comments

Pipelines Act of February 25, 1920

Authorizes the Secretary of the Interior or appropriate agency head to grant rights-of-way through any Federal lands for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced therefrom to any applicant possessing the qualifications provided in the act.

This page contains no comments

Public Buildings Cooperative Use Act of 1976

Authorizes the Federal government to acquire and utilize space in suitable buildings of historic, architectural, or cultural significance, unless use of such space would not prove feasible and prudent compared with available alternatives; to encourage the location of commercial, cultural, educational, and recreational facilities and activities within public buildings; to provide and maintain space, facilities, and activities, to the extent practicable, which encourages public access to and stimulates public pedestrian traffic around, into, and through public buildings, permitting cooperative improvements to and uses of the area between the building and the street, so that such activities complement and supplement commercial, cultural, educational, and recreational resources in the neighborhood of public buildings; and to encourage the public use of public buildings for cultural, educational, and recreational activities.

This page contains no comments

Public Rangelands Improvement Act of October 25, 1978

Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; charge a fee for public grazing use which is equitable; continue the policy of protecting wild free roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free roaming horses and burros which pose a threat to themselves, their habitat, and to other rangeland values. [1] ection 8.

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Section 8.

Rehabilitation Act of 1973, as amended

States that it is national policy that the Federal government plays a leadership role in promoting the employment of individuals with disabilities, and in assisting states and providers of services in fulfilling the aspirations of such individuals with disabilities for meaningful and gainful employment and independent living.

This page contains no comments

Religious Freedom Restoration Act (RFRA) (42 U.S.C. § 2000bb)

Government shall not substantially burden a person's exercise of religion even if the burden results from a rule of general applicability, except when the government demonstrates that application of the burden to the person is in furtherance of a compelling governmental interest; and is the least restrictive means of furthering that compelling governmental interest.

This page contains no comments

Rescission Act of 1995

Directs the Forest Service to establish and adhere to a schedule for analysis and decisions on all grazing allotments where National Environmental Policy Act of 1969 (NEPA) compliance is required. Notwithstanding any other law, term grazing permits which expire or are waived before the NEPA analysis and decision pursuant to the schedule developed by individual Forest Service System units, shall be issued on the same terms and conditions and for the full term of the expired or waived permit. Upon completion of the scheduled NEPA analysis and decision for the allotment, the terms and conditions of existing grazing permits may be modified, if necessary to conform to such NEPA analysis and subsequent decision.

This page contains no comments

Secure Rural Schools and Community Self-Determination Act of 2000

Through this law the Forest Service gives rural communities the means to build and improve schools, and provide road maintenance, emergency services, and conservation programs for their citizens.[1] Thus, communities are no longer dependent on Federal timber sales from national forests to improve local schools and roads.

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were and are dependent on Federal timber sales, Gallina and Chama closed schools since shrinkage of timber industry

Sikes Act of October 18, 1974, as amended

Authorizes the Secretary of the Interior and the Secretary of the Agriculture, in cooperation with the State agencies, to develop, maintain, and coordinate programs on public lands under their jurisdiction for the conservation and rehabilitation of wildlife, fish, and game. Provides that no individual will be permitted to hunt, trap, or fish on any public land within the State which is subject to a conservation and rehabilitation program under this section unless he/she has a valid public land management stamp. Makes provisions for the issuance and sale of such stamps.

This page contains no comments

Small Tracts Act of January 22, 1983

Authorizes the Secretary of Agriculture to sell, exchange, or interchange by quitclaim deed all right, title and interest, including the mineral estate, of the United States in and to certain lands within the national forest when he/she determines it to be in the public interest.

This page contains no comments

Surface Mining Control and Reclamation Act of August 3, 1977

Authorizes the Secretary of Agriculture to enter into agreements with landowners, providing for land stabilization, erosion, and sediment control, and reclamation through conservation treatment, including measures for the conservation and development of soil, water, woodland, wildlife, and recreation resources, and agricultural productivity of such lands.

This page contains no comments

Timber Exportation Act of April 12, 1926

Authorizes the exportation of lawfully cut timber from the state or territory where grown if the supply of timber for local use will not be endangered, and authorizes the Secretary to issue rules and regulations to carry out the provisions of the act.

This page contains no comments

Transfer Act of February 1, 1905

Transferred the management and control of the Forest Reserves from the General Land Office (GLO) in the Department of the Interior to the Bureau of Forestry in the Department of Agriculture.

This page contains no comments

Tribal Forest Protection Act of 2004 (Public Law 108-278)

Authorizes the Secretary of Agriculture and the Secretary of the Interior to enter into an agreement or contract with Indian tribes meeting certain criteria to carry out projects to protect Indian forest land.

This page contains no comments

U.S. Mining Laws (Public Domain Lands) Act of May 10, 1872

Provides that all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are free and open to exploration and purchase, and the lands in which they are found to occupation and purchase by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners, so far as the same are applicable and not inconsistent with the laws of the United States. There are a number of acts which modify the mining laws as applied to local areas by prohibiting entry altogether or by limiting or restricting the use which may be made of the surface and the right, title, or interest which may pass through patent.

This page contains no comments

Wild Free-Roaming Horses and Burros Act of December 15, 1971

(As amended by Federal Land Policy Management Act of 1976 and Public Rangelands Improvement Act of 1978)

Protects wild free roaming horses and burros from capture, branding, harassment, or death; and states they are to be considered in the area where presently found an integral part of the natural system of the public lands.

This page contains no comments

Wild and Scenic Rivers Act of October 2, 1968

Instituted a National Wild and Scenic Rivers System by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

This page contains no comments

Wilderness Act of September 3, 1964

Established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas" and administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness. Provides for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. States that no Federal lands shall be designated as "wilderness areas" except as provided for in the act or by a subsequent act.

Carson NF wilderness areas are designated under the following authorities:

- Columbine-Hondo Wilderness Act of 2014 (Public Law 113-291) designates Columbine-Hondo Wilderness area, adjusts the boundary of Wheeler Peak Wilderness area.
- New Mexico Wilderness Act of 1980 (Public Law 96-550) designates Latir Peak and Cruces Basin Wilderness areas, adds 14,700 acres to Wheeler Peak Wilderness area.
- Endangered American Wilderness Act of 1978 (Public law 95-237) designates the Chama River Canyon Wilderness area.
- The Wilderness Act of 1964 (Public law 88-577) designates Wheeler Peak and Pecos Wilderness areas.

This page contains no comments

Youth Conservation Corps Act of August 13, 1970

Establishes a Youth Conservation Corps whom the Secretaries of the Interior or Agriculture may employ without regard to the civil service or classification laws, rules, or regulations for the purpose of developing, preserving, or maintaining the lands and waters of the United States.

1orest Service Regulations

Below is a partial listing of relevant regulations. Federal executive departments and administrative agencies write regulations to implement laws. Regulations are secondary to law. However, both laws and regulations are enforceable.

36 CFR 60 National Register of Historic Places

Sets forth the procedural requirements for listing properties on the National Register.

36 CFR 63 Determinations of Eligibility for Inclusion in the National Register of Historic Places

Developed to assist agencies in identifying and evaluating the eligibility of properties for inclusion in the National Register, and to explain how to request determinations of eligibility.

36 CFR 62 National Natural Landmarks Program

The procedures in this part set forth the processes and criteria for the identification, evaluation, designation, and monitoring of national natural landmarks.

36 CFR 65 National Historic Landmarks Program

Sets forth the criteria for establishing national significance and the procedures used by the Department of the Interior for conducting the National Historic Landmarks Program.

36 CFR 212 Forest Development Transportation System

Sets forth the requirements for the development and administration of the forest development transportation system.

36 CFR 219 Planning

Sets forth a process for developing, adopting, and revising land and resource management plans for the National Forest System. 219.1-(b) Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528-531) (MUSYA), the Forest Service manages the NFS to sustain the multiple use of its renewable resou

36 CFR 221 Timber Management Planning

Sets forth the requirements for management plans for national forest timber resources.

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36 CFR 222 Range Management

Sets forth the requirements for range management on the national forests, and for the administration of wild and free roaming horses and burros and their environment. See Subpart B (Management of Wild Free-Roaming Horses and Burros).

36 CFR 223 Sale and Disposal of National Forest System Timber

Sets forth the requirements relating to the sale and disposal of National Forest System timber.

36 CFR 228 Minerals

Sets forth the rules and procedures through which use of the surface of National Forest System lands, in connection with mining and mineral operations, shall be conducted so as to minimize adverse environmental impacts on National Forest System surface resources.

36 CFR 241 Fish and Wildlife

Sets forth the rules and procedures relating to the management, conservation, and protection of fish and wildlife resources on National Forest System lands.

36 CFR 251 Land Uses

Sets forth the rules and procedures relating to the use and occupancy of National Forest System lands.

36 CFR 254 Landownership Adjustments

Sets forth the rules and procedures relating to exchange and conveyance of National Forest System lands.

36 CFR 261 Prohibitions

Sets forth the general prohibitions relating to the use and occupancy of National Forest System lands.

- 36 CFR 261.7 Unauthorized livestock

36 CFR 293 Wilderness-Primitive Areas

Sets forth the requirements for the administration of wilderness and primitive areas.

36 CFR 294 Special Areas

Sets forth the requirements for designation of special recreation areas.

1 6 CFR 219: Planning, Subpart A: National Forest System Land and Resource Management Planning, (sec. 219.8.-Sustainability, (a) Sustaining social and economic systems.).

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36 CFR 295 Use of Motor Vehicles Off Forest Development Road

Sets forth the rules and procedures relating to the administrative designation and location of specific areas and trails of National Forest System lands on which the use of motor vehicles traveling off of national forest development roads is allowed.

- 36 CFR § 212, 251, 261, 295 Travel Management, Designated Routes and Areas for Motor Vehicle Use; Final Rule

36 CFR 296 Protection of Archaeological Resources: Uniform Regulations

Implements the Archaeological Resources Protection Act by establishing the uniform definitions, standards, and procedures for Federal land managers to follow in providing protection for archaeological resources located on public lands and Indian lands, including definitions of prohibited acts and penalties. The regulations also provide requirements for issuing permits under the authority of the Archaeological Resources Protection Act to any person proposing to excavate and/or remove archaeological resources from public lands or Indian lands.

36 CFR 297 Wild and Scenic Rivers

Sets forth the rules and procedures relating to Federal assistance in the construction of water resources projects affecting wild and scenic rivers or study rivers on lands administered by the Secretary of Agriculture.

36 CFR 800 Protection of Historic Properties

Sets forth the provisions for the administration of the National Historic Preservation Act.

40 CFR 51.300-309 Regional Haze Rule

The primary purposes of this subpart are to require states to develop programs to assure reasonable progress toward meeting the national goal of preventing any future, and remedying any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution; and to establish necessary additional procedures for new source permit applicants, states and Federal land managers to use in conducting the visibility impact analysis required for new sources under §51.166. This subpart sets forth requirements addressing visibility impairment in its two principal forms: “reasonably attributable” impairment (i.e., impairment attributable to a single source/small group of sources) and regional haze (i.e., widespread haze from a multitude of sources which impairs visibility in every direction over a large area).

40 CFR § 121-135 Water Programs

Sets forth the provisions for the administration of water programs including state certification of activities requiring a Federal license or permit, EPA administered permit programs, state program requirements, procedures for decision making, criteria and standards for the National Pollutant Discharge Elimination System, toxic pollutant effluent standards, water quality planning and management, water quality standards, water quality guidance for the Great Lakes System, secondary treatment regulation, and, prior notice of citizen suits. See Title 40 (Protection of Environment), Chapter 1 (Environmental Protection Agency), subchapter D (Water Programs).

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40 CFR 1500 Council on Environmental Quality

Council on Environmental Quality regulations implementing the National Environmental Policy Act.

43 CFR 3 Preservation of American Antiquities

Implements the provisions of the Antiquities Act of 1906.

43 CFR 10 Native American Graves Protection and Repatriation Act Regulations

Implements the provisions of the Native American Graves Protection and Repatriation Act of 1990.

49 CFR 24.102, 103, 104 Basic Acquisition Policies, Criteria for Appraisals, Review of Appraisals

Real property acquisition.

50 CFR 402 Regulations Governing Interagency Cooperation—Endangered Species Act of 1973, as amended

Interprets and implements the act. Addresses forms of consultation (early, formal, informal and emergency), conferencing, preparation of biological assessments, designation of lead agency, responsibilities of Federal agency following issuance of a biological opinion, reinitiation of formal consultation, and irreversible or irretrievable commitment of resources.

Executive Orders

Below is a partial listing of relevant executive orders. Executive orders are official documents by which the President provides instructions to executive departments and agencies. An executive order may be used to reassign functions among executive branch agencies. It may adopt guidelines, rules of conduct, or rules of procedure for government employees or units of government. It can also establish an advisory body or task force.

Executive Order 11593 Protection and Enhancement of the Cultural Environment, 1973

States that the Federal government shall provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation, and that Federal agencies shall administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; initiate measures necessary to direct their policies, plans, and programs in such a way that federally-owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the people; and, in consultation with the Advisory Council on Historic Preservation, institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance.

This page contains no comments

Executive Order 11990 Protection of Wetlands, 1977

Requires each Federal agency to provide leadership and to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for acquiring, managing, and disposing of Federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Executive Order 12862 Setting Customer Service Standards, 1993

Requires all executive departments and agencies that provide significant services directly to the public to provide those services in a manner that seeks to meet the customer service standard established in the order, and requires agencies to identify customers, survey customers and front-line employees to determine the kind and quality of services needed and barriers to those services, benchmark customer service performance against the best in the business, make information, services, and complaint systems easily accessible, and provide a means to address customer complaints.

Executive Order 12898

(Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994)

Addresses environmental justice in minority and low-income populations and is designed to focus Federal attention on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice. The order is also intended to promote nondiscrimination in Federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities' access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.

Executive Order 13007 Indian Sacred Sites, 1996

Requires each executive branch agency with statutory or administrative responsibility for the management of Federal lands, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

Executive Order 13112 Invasive Species, 1999

Ensures that Federal programs and activities to control and prevent invasive species are coordinated, effective, and efficient. It defines invasive species as "…an alien (or nonnative) whose introduction does or is likely to cause economic or environmental harm or harm to human health."

This page contains no comments

Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, 2000

Promotes regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, strengthens the United States government-to-government relationships with Indian tribes, and reduces the imposition of unfunded mandates upon Indian tribes.

Executive Order 13186 Responsibility of Federal Agencies to Protect Migratory Birds, 2001

Directs Federal agencies, as practicable, to support the conservation of migratory birds, restore and enhance the habitat of migratory birds, prevent or abate pollution or detrimental alteration of the environment for the benefit of migratory birds, ensure agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as Partners-in-Flight, ensure that environmental analyses of Federal actions required by NEPA evaluate effect on migratory birds, and promote research, education, and training related to conservation of migratory birds.

Executive Order 13195 Trails for America in the 21st Century

"Federal agencies will… protect, connect, promote, and assist trails of all types… This will be accomplished by… protecting the trail corridors associated with National Scenic Trails… to the degree necessary to ensure that the values for which [the] trail was established remain intact."

Executive Order 13287 Preserve America, 2003

Advances the protection, enhancement, and contemporary use of the historic properties owned by the Federal government, and promotes intergovernmental cooperation and partnerships for the preservation and use of historic properties. Directs Federal agencies to increase their knowledge of historic resources in their care and to enhance the management of these assets. Encourages agencies to seek partnerships with state, tribal, and local governments and the private sector to make more efficient and informed use of their resources for economic development and other recognized public benefits. Better combines historic preservation and nature tourism by directing agencies to assist in the development of local and regional nature tourism programs using the historic resources that are a significant feature of many state and local economies.

Executive Order 13352 Facilitation of Cooperative Conservation, 2004

Ensures that the Departments of the Interior, Agriculture, Commerce, and Defense and the Environmental Protection Agency implement laws relating to the environment and natural resources in a manner that promotes cooperative conservation, with an emphasis on appropriate inclusion of local participation in Federal decision-making, in accordance with their respective agency missions, policies, and regulations.

Executive Order 13423

(Strengthening Federal Environmental, Energy, and Transportation Management, 2007)

This page contains no comments

Directs Federal agencies to conduct their environmental, transportation, and energy-related activities in support of their respective missions in an environmentally, economically and fiscally sound, integrated, continuously improving, efficient, and sustainable manner.

Executive Order 13433 Facilitation of Hunting Heritage and Wildlife Conservation, 2007

Directs Federal agencies with programs and activities that have a measureable effect on public management, outdoor recreation, and wildlife management, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.

Executive Order 13514 Federal Leadership in Environmental, Energy, and Economic Performance, 2009

Expands on the energy reduction and environmental performance requirements for Federal agencies identified in EO 13423. The goal is to establish an integrated strategy towards sustainability in the Federal Government and to make reduction of greenhouse gas emissions (GHG) a priority for Federal agencies. Lays out numerical targets for agencies, sets non-numerical targets that agencies must reach, and calls for specific management strategies to improve sustainability.

Executive Order 13604

(Improving Performance of Federal Permitting and Review of Infrastructure Projects)

An initiative to modernize decision-making processes throughout the federal government through improved efficiency and transparency. On May 17, 2013, in following up on the Executive Order, President Obama issued a Presidential Memorandum—"Modernizing Federal Infrastructure Review and Permitting Regulations, Policies, and Procedures" (The White House, 2013). The memorandum highlighted the need for improved mitigation policies that provide project developers with greater predictability, facilitate landscape-scale mitigation and interagency mitigation plans (where appropriate), and enhance accountability, transparency, and effectiveness. The administration has charged the Forest Service with participating in this modernization effort.

Forest Service Directives

The following is a partial listing of national and regional Forest Service policies relevant to this plan. A complete listing can be found in Forest Service Manuals and Forest Service Handbooks at http://www.fs.fed.us/im/directives/.

The directives system is the primary basis for the management and control of all internal programs and serves as the primary source of administrative direction for Forest Service employees. The system sets forth legal authorities, management objectives, policies, responsibilities, delegations, standards, procedures, and other instructions.

The Forest Service Manual (FSM) contains legal authorities, goals, objectives, policies, responsibilities, instructions, and the necessary guidance to plan and execute assigned programs and activities. Forest Service Handbooks (FSH) are directives that provide instructions and guidance on how to proceed with a specialized phase of a program or activity. Handbooks either

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are based on a part of the FSM or they incorporate external directives. Forest Service Manuals and applicable Forest Service Handbooks provide guidance only and do not provide required direction.

FSM 1000 Organization and Management

- FSM 1010 Laws, Regulations, and Orders
- FSM 1020 Forest Service Mission
- FSM 1400 Controls
- FSM 1410 Management Reviews

FSM 1500 External Relations

- FSM 1560 State, Tribal, County, and Local Agencies, Public and Private Organizations
    - FSM 1563 American Indian and Alaskan Native Relations

FSM 1600 Information Resources

FSM 1900 Planning

- FSM 1920 Land and Resource Management Planning
- FSM 1950 Environmental Policy and Procedures

FSM 2000 National Forest Resource Management

- FSM 2020 Ecological Restoration and Resilience
- FSM 2030 Large Scale Event Recovery
- FSM 2060 Ecosystem Classification, Interpretation, and Application
- FSM 2070 Biological Diversity
    - FSM 2070.3 Vegetation Ecology (use of native plants in revegetation, rehabilitation, and restoration)
- FSM 2080 Noxious Weed Management, Southwestern Region supplement (weed free policy)
- FSM 2200 Range Management
- FSM 2260 Wild Free-Roaming Horses and Burros

FSM 2300 Recreation, Wilderness, and Related Resource Management

- FSH 2309.18 Trails Management Handbook
- FSH 2309.24 Cultural Resources Handbook, Southwestern Region Supplement, Chapter 10 – Survey Standards

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        - FSH 2309.24 Cultural Resources Handbook, Southwestern Region Supplement, Chapter 40 – Damage Assessment
    - FSM 2320 Wilderness Management
    - FSM 2330 Publicly Managed Recreation Opportunities
        - FSM 2332.11 Hazard Trees
    - FSM 2350 Trail, River, and Similar Recreation Opportunities
        - FSM 2353.4 Administration of National Scenic and National Historic Trails
    - FSM 2360 Heritage Program Management
        - FSM 2360 Special Interest Areas, Southwestern Region Supplement 2300-99-3
    - FSM 2380 Landscape Management
    - FSM 2300-99-3 Southwest Region Supplement

FSM 2400 Timber Management, Southwestern Region

- FSM 2430 Commercial Timber Sales, Southwestern Region, Small Sales and Commercial/Personal Use Permits of Timber, Fuelwood, and other forest products
- FSM 2470 Silvicultural Practices

FSM 2500 Watershed and Air Management

- FSM 2540 Water Uses and Development, Southwestern Region supplement
    - FSH 2509.25 Watershed Conservation Practices Handbook

FSM 2600 Wildlife, Fish, and Sensitive Plant Habitat Management

- FSM 2610 Cooperative Relations
- FSM 2630 Management of Wildlife and Fish Habitat
- FSM 2670 Threatened, Endangered and Sensitive Plants and Animals

FSM 2700 Special Uses Management

- FSM 2726 Energy Generation and Transmission
- FSM 2728 Communications
    - FSH 2709.11 Special Uses Handbook
    - FSH 2709.14 Recreation Special Uses Handbook

FSM 2800 Minerals and Geology

- FSM 2810 Mining Claims
- FSM 2820 Mineral Leases, Permits, Licenses
- FSM 2850 Mineral Materials

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- FSH 2809.15 Minerals and Geology Handbook

FSM 3100 Cooperative Fire Protection

FSM 3400 Forest Pest Management

- FSM 3400 Forest Health Protection and Southwestern Region Supplement 3400-91-1

FSM 5100 Fire Management

FSM 5400 Land Ownership

- FSM 5410 Appraisals
- FSM 5420 Land Purchases and Donations
  - FSH 5409.13 Land Acquisition Handbook
- FSM 5430 Exchanges
- FSM 5460 Right-of-Way Acquisition
  - FSH 5409.17 Rights-of-Way Acquisition Handbook
- FSM 5500 Land Ownership Title Management
- FSM 7300 Buildings and Other Structures
  - FSM 7310 Buildings and Related Facilities
  - FSH 7309.11 Buildings and Related Facilities Handbook

FSM 7400 Public Health and Pollution Control Facilities

- FSM 7420 Drinking Water

FSM 7500 Water Storage and Transportation

FSM 7700 Transportation System

- FSM 7710 Travel Planning
  - FSH 7709.55 Travel Analysis
  - FSH 7709.56 Preconstruction Handbook
  - FSH 7709.57 Road Construction Handbook
  - FSH 7709.59 Road Operations
- FSM 7720 Development (Policy on Transportation)
- FSM 7730 Operation and Maintenance

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State Regulations

New Mexico Administrative Code, Title 20, Chapter 2, Part 3. Ambient Air Quality Standards

New Mexico Administrative Code, Title 20, Chapter 2, Part 65. Smoke Management

New Mexico Administrative Code, Title 20, Chapter 6, Part 2. Ground and Surface Water Protection

New Mexico Administrative Code, Title 20, Chapter 6, Part 4. Standards for Interstate and Intrastate Surface Waters

Treaty of Guadalupe Hidalgo 1848

Programmatic Agreements

- Memorandum of Understanding between the Jicarilla Apache Tribe and the USDA Forest Service, Carson National Forest (coming soon).
- Memorandum of Understanding between the Ohkay Owingeh Pueblo and the USDA Forest Service, Carson National Forest (2017).
- Memorandum of Understanding between the Picuris Pueblo and the USDA Forest Service, Carson National Forest (2017).
- Memorandum of Understanding between the Southern Ute Tribe and the USDA Forest Service, Carson National Forest (coming soon).
- Memorandum of Understanding between the Taos Pueblo and the USDA Forest Service, Carson National Forest (2017).
- Memorandum of Understanding between the National Speleological Society and the USDA Forest Service (2011).
- Memorandum of Understanding among the U.S. Department of Agriculture, U.S. Department of Commerce, U.S. Department of Defense, U.S. Department of Energy, Environmental Protection Agency, The Council on Environmental Quality, The Federal Energy Regulatory Commission, The Advisory Council on Historic Preservation, and U.S. Department of the Interior, regarding cooperation in Federal agency review of electric transmission facilities on Federal land.
- Memorandum of Understanding between the State of New Mexico Environment Department and the US Forest Service Southwestern Region (2012).
- First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities among New Mexico Historic Preservation Officer and Arizona State Historic Preservation Officer and Texas State Historic Preservation Officer and Oklahoma State Historic Preservation Officer and the Advisory Council on the Historic Preservation and United States Department of Agriculture Forest Service Southwestern Region.
- Memorandum of Understanding between the Forest Service and the Fish and Wildlife Service to Promote the Conservation of Migratory Birds.
- Memorandum of Understanding between Animal and Plant Health Inspection Service – Wildlife Services and the Forest Service National Forest System (concerning wildlife damage management on National Forest System lands).

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Number: 1 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:22:20 AM
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Number: 2 Author: Sanchez Ranches Subject: Highlight Date: 10/20/2021 8:22:11 AM
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- Memorandum of Understanding among the Arizona Game and Fish Department, New Mexico Game and Fish Department, Animal and Plant Health Inspection Service Wildlife Services, Forest Service, Fish and Wildlife Service, White Mountain Apache Tribe, and various counties in Arizona and New Mexico for the conservation, management, and wild persistence of the Mexican wolf in its recovery area.

Other Sources of Information

Cultural Resources

- Forest Service, Southwestern Region, Cultural Affiliations: Prehistoric Cultural Affiliations of Southwestern Indian Tribes
- National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties
- Secretary of Interior National Register Bulletins
- Secretary of Interior Guidelines for Rehabilitation of Historic Buildings
- Archeology and Historic Preservation: Secretary of the Interior Standards and Guidelines, as amended and annotated
- Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook
- Advisory Council on Historic Preservation, Guidance of Coordinating NEPA and Section 106
- Region 3 Policy on Providing Forest Products to Federally-Recognized Tribes for Traditional and Cultural Purposes (in development)
- USC Title 25 Indians, Chapter 32 – A Cultural and Heritage Cooperation Authority, (Section: 3051-3057)
- 36 CFR § 261 Prohibitions in Areas Designated by Order; Closure of National Forest System Lands to Protect Privacy of Tribal Activities
- National Register Bulletin 38, Guidelines for Evaluating and Documenting Traditional Cultural Properties
- U.S. Department of Agriculture, Departmental Regulation Number 1350-002: Tribal Consultation, Coordination, and Collaboration
- U.S. Department of Agriculture, Report to the Secretary of Agriculture: USDA Policy and Procedures Review and Recommendations Indian Sacred Sites
- Memorandum of Understanding Regarding Interagency Coordination for Protection of Indian Sacred Sites
- Memorandum of Understanding Among the U.S. Department of Defense, U.S. Department of the Interior, U.S. Department of Agriculture, U.S. Department of Energy, and the Advisory Council on Historic Preservation Regarding Interagency Coordination and Collaboration for the Protection of Indian Sacred Sites
- U.S. Department of Agriculture, American Indians and Alaska Native: A Guide to USDA Programs

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- Advisory Council on Historic Preservation, Consultation with Indian Tribes in the Section 106 Review Process: A Handbook

Eligible and Suitable Wild and Scenic Rivers

- FSH 1909.12 Land Management Planning Handbook, Chapter 80 – Wild and Scenic River Evaluation (Section: Interim Management of Eligible or Suitable Rivers)
- IWSRCC (Interagency Wild and Scenic Rivers Coordinating Council), An Introduction to Wild and Scenic Rivers (Technical Report) www.rivers.gov/documents/wsr-primer.pdf
- IWSRCC (Interagency Wild and Scenic Rivers Coordinating Council), A Compendium of Questions & Answers Relating to Wild & Scenic Rivers (Technical Report)

Energy Corridors

- Record of Decision: USDA Forest Service Designation of Section 368 Energy Corridors on National Forest System Land in 10 Western States, January 14, 2009: Appendix A: FS Land Use Plan Amendments

Lands

- Taos County Comprehensive Plan
- Rio Arriba County Comprehensive Plan
- Colfax County Comprehensive Plan

Minerals and Geology

- Memorandum of Understanding between the National Speleological Society and the Forest Service Cave and Karst Management
- 36 CFR § 228, Subpart A – Locatable Minerals
- 36 CFR Part 290 Cave Resources Management

Mining and Minerals

- 36 CFR § 228, Subpart A – Locatable Minerals

National Scenic, Historic, and Recreation Trails

- USDI, Old Spanish National Historic Trail, Final Comprehensive Administrative Strategy
- 1985 Continental Divide National Scenic Trail (CDNST) Comprehensive Plan

Nonnative Invasive Species

- Forest Service Southwestern Region Guidance for Invasive Species Management
- Forest Service, Guide to Noxious Weed Prevention Practices

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- Forest Service, Operational Guidelines for Aquatic Invasive Species Prevention and Equipment Cleaning
- Preventing Spread of Aquatic Invasive Organisms Common to the Southwestern Region Technical Guidelines for Fire Operations, Interagency Guidance Rev. August 2009

Rangelands and Livestock Grazing

- Interagency Ecological Site Descriptions: Handbook for Rangelands (January 2013)
- Forest Service, Southwestern Region, Rangeland Analysis and Management Training Guide (2013)
- Bureau of Land Management, Measuring and Monitoring Plant Populations (Technical Reference 1730-1, 1998)
- Interagency Ecological Site Descriptions: Handbook for Rangelands (January 2013)
- FSH 2209.13 Grazing Permit Administration Handbook, Southwestern Region Supplement

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- Forest Service, Outdoor Recreation Accessibility Guidelines (FSORAG) (Section: Technical Provisions).
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- Forest Service, Connecting People with America's Great Outdoors: A Framework for Sustainable Recreation (2010)

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- Bureau of Land Management, Riparian area management: A user guide to assessing proper functioning condition and the supporting science for lotic areas. Tech. Ref. 1737-15
- Bureau of Land Management, Riparian area management: A user guide to assessing proper functioning condition and the supporting science for lentic areas. Tech. Ref. 1737-16
- Forest Service, Technical Guide to Managing Groundwater Resources Part 2 (Section: Overview of National Groundwater Policy) (FS-881)
- Forest Service, National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1 (FS-990a)
- Forest Service, Groundwater-Dependent Ecosystems: Level II Inventory Field Guide (General Technical Report WO-86b)

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- Forest Service, Landscape Aesthetics: A Handbook for Scenery Management (Agriculture Handbook 701)

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- FSM 2550 Soil Management, Southwestern Region Supplement, Soil Management

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- Forest Service, National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1 (FS-990a)

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- Interagency Ecological Site Descriptions: Handbook for Rangelands (January 2013)

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- Forest Service, National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1 (FS-990a)
- Forest Service, Watershed Condition Framework: A Framework for Assessing and Tracking Changes to Watershed Conditions (FS-977)
- Forest Service, Watershed Condition Classification and Technical Guide (FS-978)
- New Mexico Administrative Code, Title 20 – Environmental Protection, Chapter 6 (Water Quality)
- Memorandum of Understanding between Forest Service Southwestern Region and the State of New Mexico Environment Department
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- Forest Service, Groundwater-Dependent Ecosystems: Level II Inventory Field Guide (General Technical Report WO-86b)

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- Forest Service, Southwestern Region, Minimum Impact Suppression Tactics
- Interagency Prescribed Fire Planning and Implementation Procedures Guide (Section: Prescribed Fire Planning Process)
- Interagency Standards for Fire and Aviation Operations (Red Book), Forest Service Wildland Fire and Aviation Program Organization and Responsibilities
- Interagency Standards for Fire and Aviation Operations (Red Book), Forest Service Wildland Fire and Aviation Program Organization and Responsibilities (Section: Fuels Management)
- Interagency Guidance for Implementation of Federal Wildland Fire Management Policy (February 13, 2009)
- Annual Interagency Guidance for Preventing Spread of Aquatic Invasive Organisms Common to the Southwestern Region (Section: Technical Guidelines for Fire Operations)
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- Cimarron Watershed Alliance Community Wildfire Protection Plan (2008)Colfax County Community Wildfire Protection Plan (2008)
- Enchanted Circle Regional Fire Protection Association Community Wildfire Protection Plan (2006)
- Mora County Community Wildfire Protection Plan (2005)
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- Taos County Community Wildfire Protection Plan (2009)
- Taos Pines Association Community Wildfire Protection Plan (2006)
- Taos Pueblo Community Wildfire Protection Plan (2009)
- Upper Rio Chama Community Wildfire Protection Plan (2008)
- Village of Questa Community Wildfire Protection Plan (2008)

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- Forest Service, Southwestern Region, Minimum Impact Suppression Tactics
- Forest Service, Minimum Requirements Decision Guide http://www.wilderness.net/MRA
- Wilderness.net toolboxes http://wilderness.net/index.cfm?fuse=toolboxes
- Forest Service, Keeping it Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System (RMRS-GTR-212)

Wildlife, Fish, and Plants

- Federal Register legal notices for 50 CFR § 217 Endangered Species Act listings, proposed listings, designated critical habitat, proposed critical habitat, five-year reviews, and other species or habitat status changes
- Species recovery plans
- Protection of Bald and Golden Eagles-Definition of “Disturb” (Federal Register, Volume 72, Number 107, June 5, 2007); Authorizations Under the Bald and Golden Eagle Protection Act for Take of Eagles (Federal Register, Volume 73, Number 98, May 20, 2008); and Forest Service Southwestern Region direction regarding Permitting Regulations for Take of Eagles (November 18, 2009)
- National and State bald eagle management guidelines (recommendations for avoiding disturbance, activity specific guidelines, and additional recommendations)
- Forest Service, Management Recommendations for the Northern Goshawk in the Southwestern United States (General Technical Report RM-217)
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- Western Association of Fish and Wildlife Agencies, Wild Sheep Working Group, Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat (Management Recommendations)
- Rio Grande Cutthroat Trout Wildfire Risk Assessment
- Conservation Agreement for Rio Grande Cutthroat Trout in the States of Colorado and New Mexico

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