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CHAPTER 4 – MONITORING PLANS

4.1 San Juan National Forest Monitoring Plan

4.1.1 Introduction

The National Forest Management Act requires “continuous monitoring and assessment in the field” to establish the basis for “evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land” (16 USC 1604(g)(3)(C)). The monitoring plan for this LRMP provides a framework for the adaptive management process alluded to in the NFMA by establishing priorities and timelines for the evaluation of ecological, social, and economic conditions and trends that contribute to sustainability and reflect progress towards the land management goals for the SJNF. Effective monitoring and evaluation fosters improved management and more informed planning decisions. It helps identify the need to adjust desired conditions, objectives, standards, and guidelines as conditions change. Monitoring and evaluation help the SJNF and the public determine how the LRMP is being implemented, whether LRMP implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid.

Monitoring requires addressing key ecological, social, and economic measures. Selection of those measures is based upon relevancy to the following questions established within the NFMA:

1. Monitoring to determine whether LRMP implementation is achieving multiple use objectives;
2. Monitoring to determine the effects of the various resource management activities within the planning area on the productivity of the land;
3. Monitoring of the degree to which on-the-ground management is maintaining or making progress towards the desired conditions for the LRMP;
4. Adjustments of the monitoring program or LRMP content as appropriate to account for unanticipated changes in conditions, new information, or new policy.

These four questions are investigated using one or more of the following monitoring strategies:

- **Effectiveness Monitoring:** Determines whether or not implementing the direction and desired conditions in the LRMP is effective at achieving the related goals and objectives.
- **Implementation Monitoring:** Determines whether or not projects were implemented according to LRMP direction (standards and guidelines).
- **Validation Monitoring:** Verifies whether or not assumptions and models used in LRMP implementation are appropriate and determines whether or not implementing the direction and desired conditions in the LRMP is effective at achieving the goals and objectives.

4.1.2 Monitoring Process

LRMP monitoring follows the following process: establish monitoring priorities, identify sources of information and partners, collect and evaluate the data, and report results of the evaluation including needed changes to the LRMP.

Step 1—Establish Monitoring Priorities: With finite resources (budget and personnel) it is not possible to address all of the questions related to management issues or programs. This monitoring plan describes priorities related to collecting, managing, and evaluating data. Priorities for monitoring are established using the following criteria:

- monitoring item is required by law, regulation, or policy;
- ecological significance (a measure of the potential risk to natural resources if the monitoring is not completed; this includes the potential for long-term or irreversible damage and the geographic extent of the potential effects);
- level of scientific controversy surrounding the issue;
- level of public controversy or concern surrounding the issue;
- likelihood of achieving desired conditions;

- data needs identified from previous monitoring activities;
- assessment of benefits versus the cost of collecting data; and
- emerging issues and concerns that may be addressed through monitoring.

In addition to these criteria, the Nature Conservancy facilitated sessions with USFS and BLM personnel to develop a prioritized menu of indicators for monitoring the integrity of key ecological features on BLM and NFS lands in southwest Colorado (Oliver et al. These sessions resulted in a framework that has been used to prioritize portions of this monitoring plan.

Step 2—Identify Sources of Information and Partners: The USFS has a number of databases and geospatial depositories that are updated annually and used to report accomplishments, depict resource conditions at a single point in time, or to display trends in resource conditions. These databases must be identified comprehensively before monitoring begins and used as tools to facilitate monitoring and reduce redundancy.

It is also essential that partners and potential cooperators that have relevant information, or that should be involved with developing monitoring protocols and actions, are identified. These partners could include state, tribal, or local agencies (especially if they share responsibility for a resource such as non-native invasive weeds or water management); organizations with shared interests in the monitoring outcome; universities, colleges, or secondary schools; the research branch of the USFS; and many others.

The SJNF will hold monitoring and evaluation meetings at least once every 2 years with partners and other interested stakeholders from the general public, organizations, or local governments. The meetings will be open to the public and community members will be encouraged to help SJNF personnel in monitoring LRMP implementation, evaluating ecological, social, and economic impacts, and identifying amendment needs and proposed solutions.

Step 3—Collect and Evaluate the Data: Resource managers will evaluate the data collected, with the goal of answering the four monitoring questions listed above. Evaluation is the ongoing process of translating data into a continuing stream of useful information to assess the status of conditions relative to those specified in the LRMP and to recognize when modifications or course corrections are called for in desired conditions, other LRMP direction, or the monitoring program itself. The LRMP's desired conditions, indicators, and the evaluation process are all tightly linked into continuous loops to feed the adaptive planning model.

There are four components that contribute to effective evaluation:

- **Evaluation Context:** a sense of the history of the place or the circumstances (temporal and special context).
- **Evaluation Baseline and Reference Information:** describes the change from a baseline or reference condition, either toward or away from a desired condition. The desired condition may, or may not, be fully achieved; however, it is important to know if management activities are proceeding in the desired direction.
- **Evaluation Information Used to Infer Outcomes and Trends:** conclusions will be drawn from an interpretation of monitoring information.
- **Evaluation Results Documented in a Biennial Monitoring and Evaluation Report:** the SJNF will publish a biennial monitoring report to share information and initiate changes in management activities.

Step 4—Publish the Biennial Monitoring Report: The SJNF will publish and distribute a biennial monitoring report. The report will summarize the information collected, list potential future research needs, and will be used to inform adaptive management for the SJNF. The report will indicate whether or not a change to the LRMP, management activities, the monitoring program, or a new plan assessment may be warranted based on new information. The biennial report will be based on data and information gathered the previous two fiscal years. Contents may include some or all of the following:

- monitoring and evaluation accomplishments;
- select information used to describe ecological conditions;
- interpretations of data and conclusions which may include recommendations for changes to the LRMP, or management actions; and
- relevant information about the management of the public lands within the planning area including outputs, services, and accomplishments.

4.1.3 Management Indicator Species Monitoring

MIS are identified and monitored to assess the effects of selected management activities on their populations and on the habitats with which they are associated. Changes in MIS populations or their habitat could indicate that current management is adversely affecting the composition, structure, or function of those habitats, and could result in the need for a plan amendment or other types of adaptive management. The SJNF will monitor the status and trend of MIS populations and the condition and trend of their habitats at the scale most appropriate for the MIS population of concern.

4.1.4 Viability Monitoring

This LRMP is being developed under the provisions of the 1982 USFS Planning Regulations at 36 CFR 219.19 as allowed by the transition provision of the 2000 regulations (36 CFR 219.35, revised 2004; the 2012 forest planning regulations currently in effect allow use of the previous regulations for plan revisions initiated before the 2012 regulations took effect [36 CFR 219.17 (b) (3), 2012]). Pursuant to the provisions of the 1982 USFS Planning Regulations, the SJNF shall manage fish and wildlife habitat to maintain viable populations of existing native and desired non-native vertebrate species. Agency actions must not result in loss of population viability or create significant trends toward federal listing (FSM 2670.32). Based on these requirements, species viability is a fundamental underpinning of the ecological framework and sustainable ecosystems strategy employed in the LRMP to conserve habitats and species, and is therefore an important focus of this monitoring plan. The SJNF will use the best available information to determine long-term trends for habitats, populations, and identified species. As appropriate, habitat and/or population data from a variety of sources would be used to determine population trends. Should downward trends be identified, further investigations would be conducted in an effort to determine the cause of such trends. Causes that are tied to agency actions would be addressed through adaptive management actions.

4.1.5 Broad-scale Monitoring Strategy

This monitoring plan represents one component of a more comprehensive monitoring strategy that will apply to a larger geographic scale than just the SJNF. The broader strategy will ensure that each level of monitoring is complementary and efficient, and that information is gathered at scales appropriate to the monitoring questions. A fully integrated monitoring program will be designed to provide managers with an information stream essential to understanding the effects and effectiveness of management direction in achieving agency and LRMP goals and objectives, and to permit continuous evaluation of the LRMP itself to ensure that it remains responsive to changing conditions and new information.

4.1.6 Components of the Monitoring Plan

The monitoring plan presented in the tables below contains seven components that link monitoring efforts directly to the plan components presented in this LRMP, and guide monitoring activity for each element of the plan. These components are focused around selected desired conditions and are designed to test relevant assumptions, track relevant changes, and measure management effectiveness and progress towards achieving or maintaining the LRMP's desired conditions.

1. **Desired Condition:** The desired conditions are selected from Chapters 2 and 3 of the LRMP and serve as the basis for the monitoring plan. These are the “drivers” of the monitoring plan and provide the “questions” that this monitoring plan seeks to answer.

2. **Objective:** The objectives are projections of measureable and time-specific outcomes or accomplishments that, if achieved, would contribute to maintaining or reaching desired conditions during the life of the LRMP. They relate directly to the desired conditions and are also selected from Chapters 2 and 3 of the LRMP.
3. **Priority:** High priority (H) items have been identified by resource specialists as essential for assessing trends in ecosystem health. Monitoring elements required by law and/or by regulation are also ranked as high priority. It is expected that annual budgets would normally allow most of these high priority items to be funded. Medium priority (M) indicates that the monitoring element is directed by the LRMP (which may or may not be directly associated with required laws or regulations), as developed in Chapters 2 and 3, but would be contingent upon available funding after high priority monitoring has been funded. Low priority (L) indicates that the monitoring element involves questions of a more indirect nature, or that it does not fall under one of the above classifications. Typically these monitoring elements occur rarely unless funding and personnel are available. In general, high-priority items will have higher precision and reliability, and medium- and low-priority items will have low precision and reliability.
4. **Performance Measures and Indicators:** This column identifies USFS performance measures or other indicators that will be used to gauge or track accomplishments that lead the SJNF toward meeting objectives and desired conditions. These indicators provide a measureable quantitative or qualitative parameter.
5. **Scale:** Scale describes the level of analysis with respect to land size or level of application. This measure is important in describing impacts dealing with habitat heterogeneity and population viability issues, as well as describing cumulative impacts related to, or resulting from, management actions.
6. **Frequency of Reporting:** Frequency of reporting describes the timing of monitoring and evaluation efforts. Much data are collected annually, while other data are collected at longer or shorter intervals based on the length of time needed to discern a measureable change.
7. **Sources and Partners:** Potential data sources for information and partners that may be involved in providing input into the monitoring process or identifying areas where research may be needed.

Table 4.1.1: Terrestrial Ecosystems

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.2.35 Soil productivity is maintained at site potential, or is trending towards site potential.</p> <p>2.2.36 Long-term levels of soil organic matter and soil nutrients (including soil carbon) are maintained at sustainable levels.</p> <p>2.2.38 Management-induced soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils are rare on terrestrial ecosystems of the SJNF lands.</p> <p>2.2.39 Upland soils exhibit infiltration and permeability rates that minimize surface run-off and allow for the accumulation of the soil moisture necessary for plant growth and ecosystem function.</p>	<p>2.2.45 Within 10 years, restore or improve soil productivity and soil carbon on at least 20 miles of routes that will be closed or decommissioned on the SJNF.</p> <p>2.2.59 Within 5 years, utilize locally produced biochar to sequester carbon, to reduce erosion, and to enhance soil productivity and water retention on a minimum of 0.5 acre per year on the SJNF.</p>	H	<p>Soil penetrometer readings (before and after treatment), soil chemistry, and soil carbon results and comparisons with baseline values</p> <p>Acres treated</p>	<p>SJNF—forest wide</p> <p>Soil chemistry and soil carbon on five sites every 5 years</p> <p>Project</p>	Every 10 years	Project monitoring
<p>2.2.13 The abundance and distribution of Arizona fescue in ponderosa pine forest and in Arizona fescue mountain grasslands are maintained or increased.</p>	<p>2.2.46 Within 10 years, increase the canopy cover of Arizona fescue by at least 10% in two Arizona fescue mountain grassland sites on the SJNF that currently classify as Kentucky bluegrass mountain grasslands by using mechanical treatments, prescribed fire, and/or seeding.</p> <p>2.2.55 Within 10 years, increase the cover of Arizona fescue by at least 20% within two ponderosa pine stands on the SJNF by using mechanical treatments, prescribed fire, and/or seeding.</p>	L	Acres treated	Project	Every 5 years	Forest Service Activity Tracking System (FACTS), grazing allotment monitoring

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.2.1 The composition, structure, and function of terrestrial ecosystems are influenced by natural ecological processes, including disturbance events such as fire, infestations by insects or disease, winds, and flooding.</p> <p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p>	<p>2.2.47 Within 10 years, inventory and map stand structure changes that have resulted from spruce beetle mortality and wildfire.</p>	M	Pre- and post-spruce beetle outbreak acres, <i>and</i> wildfire areas, by development stage; changes in acres	SJNF -- forest wide	Every 5 years	Aerial photo series and field sampling, FSVeg database
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p> <p>2.9.2 SJNF lands classified as “suitable” for timber production have a regularly scheduled timber harvesting program.</p>	<p>2.2.48 Within 15 years, on suitable timber lands of the SJNF, reforest 15% of spruce-fir forests that have extensive mortality of overstory spruce that do not have appropriate forest cover and will not reforest within 15 years.</p>	H	Area reforested in comparison to acres not meeting forest cover standards; acres	SJNF -- forest wide	Every 5 years	Aerial photo series and field sampling, planting survival surveys, stocking surveys; FACTS
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p>	<p>2.2.49 Within 15 years, increase the young development stage of cool-moist mixed conifer forests on the SJNF from 0.5% to 15% by using prescribed fire and mechanical treatments (e.g., timber harvest) in the mature cool-moist mixed conifer forests.</p>	L	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p>	<p>2.2.50 Within 15 years, increase the young development stage of aspen forests on the SJNF to 25% by clear cutting and/or conducting prescribed fire in mature aspen stands, and mixed conifer stands with an aspen component.</p>	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p>	<p>2.2.52 Within 15 years, increase the percent of ponderosa pine forests in the young development stage from zero to 3% on SJNF by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).</p>	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSVeg database; stand exam

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p> <p>2.2.10 Forested terrestrial ecosystems display a Fire Regime Condition Class of 1.</p>	<p>2.2.53 Within 15 years, increase the percent of warm-dry mixed conifer forests in the young development stage from zero to 3% on SJNF lands by using mechanical treatments (e.g., timber harvest) or fire (prescribed or natural ignitions).</p>	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSveg database; stand exam
<p>2.2.6 All development stages of the forested terrestrial ecosystems are well represented at the landscape scale and occur within the ranges identified in Table 2.2.1.</p> <p>2.2.10 Forested terrestrial ecosystems display a Fire Regime Condition Class of 1.</p>	<p>2.2.54 Within 15 years, improve the composition, structure, and function of 25,000 acres of ponderosa pine forests by using low-intensity fire.</p>	M	Changes in development stage; acres	SJNF -- forest wide	Every 5 years	FACTS; FSveg database; stand exam
<p>2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased.</p> <p>2.2.17 Local seeds of desirable native plant species are available for revegetation and restoration efforts.</p>	<p>2.2.57 Over the next 15 years, secure a reliable source of local seed stock for eight or more native grass, forb, and shrub species (including Arizona fescue), to be used for revegetation and restoration after disturbance.</p> <p>2.2.62 Over the next 15 years, revegetate and reclaim 5 acres on SJNF using native early-successional plant species developed from local plant sources to accelerate restoration success.</p> <p>2.8.61 Over the next 15 years, broaden tree seed collection activities on the SJNF to include non-commercial species and additional species-specific elevation zones to improve genetic diversity and the resilience of forested ecosystems.</p>	L	Acres of local seed stock harvested by species, number of species successfully harvested	SJNF – forest wide	5 years	Contractors Cooperators

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased.</p> <p>2.2.18 Suitable habitats for species vulnerable to climate change exist and serve as seed sources for revegetation and restoration efforts.</p>	<p>2.2.58 Over the life of the plan, collect seed from 10 local vulnerable grass, forb, and shrub species, including some alpine species, for long-term storage to protect genetic sources.</p> <p>2.8.61 Over the next 15 years, broaden tree seed collection activities on the SJNF to include non-commercial species and additional species-specific elevation zones to improve genetic diversity and the resilience of forested ecosystems.</p> <p>2.2.64 Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine-dependent systems by removing non-climate stresses that result in adverse impacts to alpine ecosystems (e.g., unmanaged livestock grazing, unmanaged motorized recreation, etc.) from 100 acres on SJNF that are forb-dominated alpine habitat.</p>	<p>L</p>	<p>Numbers of species and pounds of viable seed collected</p> <p>Acres treated</p>	<p>SJNF – forest wide</p>	<p>10 years</p>	<p>Contractors Cooperators</p> <p>Grazing allotment and other project-level monitoring</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.2.9 Terrestrial ecosystems, including habitat for special status plant species, are productive, sustainable, and resilient, and provide goods and services over the long term.</p> <p>2.2.41 Fens, wetlands, and hanging gardens have the water sources and hydrologic systems necessary to support and sustain the special status species associated with them.</p> <p>2.2.42 Shale and gypsum soils have the characteristics necessary to support and sustain the special status species associated with them.</p> <p>2.2.43 Soils that provide habitat for all special status species maintain the soil conditions necessary to support and sustain those species.</p>	<p>Monitor 50 known special status species locations and their habitats over 10 years.</p>	<p>M</p>	<p>Condition of special status species habitat; continued presence of special status species in these habitats</p>	<p>Site (areas occupied by special status species); monitor 20% of known special status species locations annually</p>	<p>Annually</p>	<p>USFWS, BLM CO Natural Heritage Program</p>
<p>2.2.44 Areas that are identified as critical habitat or proposed critical habitat for federally listed plant species have the characteristics necessary to provide for the growth and reproduction of the federally listed plant species for which they were designated.</p>	<p>2.2.66 Projects or activities in habitat occupied by federally listed plant species, or in designated critical habitat, must be designed and conducted in a manner which preserves the primary constituent elements needed to sustain the life history processes of those federally listed plant species.</p>	<p>H</p>	<p>In occupied critical habitat for Pagosa skyrocket, the indicator is the continued presence of the species.</p> <p>In unoccupied critical habitat for Pagosa skyrocket, the indicators are the presence of suitable plant communities, habitat for pollinators, and appropriate disturbance regimes.</p>	<p>Site (Critical Habitat Unit)</p>	<p>Annually in occupied critical habitat, and once every 5 years in unoccupied critical habitat</p>	<p>USFWS, BLM CO Natural Heritage Program</p>
<p>2.2.7 Old growth ponderosa pine, old growth pinyon-juniper and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on SJNF.</p>	<p>Over the next 15 years, continue to update the old-growth data base and expand the data collection to include old-growth pinyon-juniper stands.</p>	<p>M</p>	<p>Increase in the number of acres surveyed for old growth</p>	<p>SJNF – forest wide</p>	<p>5 years</p>	<p>FSVeg database</p>

Table 4.1.2: Terrestrial Wildlife

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.3.1 Wildlife populations are viable on NFS lands. Wildlife populations are self-sustaining, connected, and genetically diverse across SJNF lands.</p>	<p>Monitor habitat condition trends for terrestrial wildlife. Monitor MIS population trends.</p>	<p>H</p>	<p>Trends in vegetation, habitat structure, and MIS population trends</p>	<p>Varying scales</p>	<p>Every 10 years</p>	<p>Data sources and partners may include, but are not limited to: CPW, TNC, Forest Inventory and Analysis program (FIA), National Resource Information System (NRIS), (including Wildlife, FSVeg, and Terra databases), Colorado Bird Observatory, informed judgment by USFS ecologists and wildlife/fisheries biologists, varied existing monitoring sources, habitat inventory assessments, resource information system databases, program reviews, activity reviews, annual program reporting, and species and habitat assessments.</p>
<p>2.3.2 Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance which do not reduce habitat effectiveness.</p>	<p>Maintaining habitats capable of supporting State population objectives.</p>	<p>H</p>	<p>Density of unmitigated roads and motorized trails within identified CPW winter range and production polygons</p>	<p>Winter range and production area polygons as mapped by CPW for SJNF.</p>	<p>10 years</p>	<p>Planning area geographic information system (GIS) database.</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>Wildlife Species:</p> <p>2.3.12 Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation.</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>Maintain or improve habitat conditions for terrestrial wildlife species.</p> <p>2.3.24 Treat 2,000 or more acres of vegetation (TRFO lands) and 2,000 or more acres of vegetation (SJNF lands) over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area.</p> <p>2.3.27 Nokomis fritillary butterfly: Over the life of the Plan, restore the hydrologic conditions and plant communities during project implementation at springs or seeps capable of supporting Nokomis fritillary while, at the same time, retaining the water development for livestock or other uses.</p> <p>2.3.28 Bats: Over the life of the plan, all mine closures for human safety at sites supporting bat populations include structures (such as bat gates) designed to provide for continued use as bat habitat.</p> <p>2.3.31 MIS—Abert's squirrel: Over the life of the Plan, restore approximately 3,000 acres of ponderosa pine forest to improve habitat quality as defined in the SJNF Forest Service Abert's Squirrel Species Assessment (SJNF only).</p>	<p>H</p>	<p>Number of acres of habitat improvement completed</p>	<p>SJNF</p>	<p>5 years</p>	<p>Unit reporting; Wildlife, Fish, and Rare Plants information system (WFRP); FACTS; FSVeg database</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
	<p>2.3.32 MIS—American marten: Over the life of the Plan, treat approximately 2,000 acres of spruce-fir and cool-moist mixed-conifer forests to increase age class diversity and provide future foraging, breeding, and dispersal habitat as defined in the SJNF Forest Service American Marten Species Assessment (SJNF only).</p> <p>2.3.33 MIS—Elk: Over the life of the Plan, improve approximately 5,000 acres of winter range through mechanical and prescribed burn treatments as defined in the SJNF Forest Service Elk Species Assessment (SJNF only).</p> <p>2.3.34 MIS—Hairy woodpecker: Over the life of the Plan, harvest and regenerate approximately 3,000 acres of aspen forest to increase age class diversity and provide future mature aspen nesting habitat as defined in the SJNF Forest Service Hairy Woodpecker Species Assessment (SJNF only).</p>					
<p>Members of the public, stakeholders, and other interested parties are informed on natural resource management practices and their role in maintaining habitat for wildlife.</p>	<p>2.3.25 The USFS will annually conduct a minimum of six wildlife interpretive and environmental education programs to inform the public on natural resources management, wildlife species and their habitats, and encourage youth participation and interest in wildlife and natural resources.</p>	<p>M</p>	<p>Number of interpretive and environmental programs conducted</p>	<p>SJNF</p>	<p>Annually</p>	<p>SJNF staff and varied partners including, but not limited to, CPW, San Juan Mountains Association, and Mountain Studies Institute</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>Canada Lynx:</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>Planning and management actions for special status species.</p>	<p>H</p>	<p>Number of lynx screen uses for project analysis; reporting as required by Southern Rockies Lynx Amendment</p>	<p>SJNF</p>	<p>Annually</p>	<p>Unit reporting</p>
<p>Threatened, Endangered, and Protected Species:</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>Planning and management actions for special status species.</p>	<p>H</p>	<p>Number of requests to USFWS to initiate formal consultation or conferencing</p> <p>Number of informal consultation or conferencing submitted for written concurrence from USFWS.</p> <p>The number of conservation actions completed for listed species.</p> <p>Critical habitat designated in fiscal year.</p> <p>Number of threatened, endangered, and protected species occurring and trends (if known).</p> <p>Number of biological assessments completed.</p>	<p>SJNF</p>	<p>Annually</p>	<p>Unit reporting and WFRP</p>
<p>Sensitive Species:</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>Planning and management actions for special status species.</p>	<p>H</p>	<p>Number of biological evaluations completed</p>	<p>SJNF</p>	<p>Annually</p>	<p>Unit reporting and WFRP</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>Special status Species:</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>Planning and management actions for special status species.</p>	<p>H</p>	<p>Number of Recovery Plans, Recovery Strategies, Conservation Assessments, Conservation Strategies, or Conservation Agreements completed</p>	<p>SJNF</p>	<p>Annually</p>	<p>Unit reporting and WFRP</p>
<p>MIS occur as self-sustaining populations and are well distributed across the planning area in suitable habitat.</p> <p>2.3.19 MIS are able to disperse freely across the planning area allowing for the interchange between populations and the maintenance of genetic diversity.</p>	<p>Monitor population trends as they relate to the management activity for the Plan scoping issue the MIS was selected for.</p>	<p>H</p>	<p>Population trends at the appropriate population scale</p>	<p>SJNF</p>	<p>10 years</p>	<p>Data sources may include but are not limited to: population estimates by State wildlife agencies (CPW), varied monitoring sources, informed judgment of USFS ecologists and wildlife/fisheries biologists, habitat inventory assessments, resource information system databases, program reviews, activity reviews, annual program reporting, and species and habitat assessments.</p>

Table 4.1.3: Riparian and Wetland Ecosystems

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.4.1 Riparian and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.</p> <p>2.4.2 Riparian and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development.</p> <p>2.4.3 Forest and shrubland riparian and wetland ecosystem types display hydrophytic trees and shrubs in a variety of size classes; they provide terrestrial and aquatic habitats, stream shading, woody channel debris, aesthetic values, and other ecosystem functions.</p>	<p>2.4.13 Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites that currently classify as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.</p> <p>2.4.14 Within 10 years, determine the functional condition of 15 miles on SJNF of riparian and wetland ecosystems using the Proper Functioning Condition assessment method.</p> <p>2.4.15 Within 15 years, treat two fens on SJNF lands with impaired functions.</p>	M	Acres monitored; acres of proper functioning riparian and wetland ecosystems; acres monitored for invasive species	Site or reach	5 years	
<p>2.4.4 Woody debris in a variety of sizes is present in forest and shrubland riparian and wetland ecosystem types.</p> <p>2.4.9 Soil productivity is intact on all riparian and wetland ecosystems on the SJNF.</p>	<p>2.4.13 Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on SJNF that currently classify as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.</p>	L	Acres treated and monitored for effectiveness; acres meeting woody debris and soil productivity objectives	Site or reach	5 years	

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.4.12 Management-induced soil erosion, soil compaction, soil displacement, puddling, and/or severely burned soils are rare on all riparian and wetland ecosystems of the SJNF. Long term impacts to soils (e.g. soil erosion, soil compaction, soil displacement, puddling and/or severely burned soils) from management actions are rare on all riparian area and wetland ecosystems of the SJNF.	2.4.14 Within 10 years, determine the functional condition of 15 miles on SJNF of riparian and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998).	H	Acres monitored for soil erosion or damage; BMPs implemented and effective; acres of soil erosion, compaction, displacement, puddling, or high burn severity	Site or reach--BMP monitoring is annual; burn monitoring only after a burn occurs	5 years	

Table 4.1.4: Aquatic Ecosystems and Fisheries

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.	Population inventories and trend/viability assessments for aquatic MIS.	H	MIS per mile or MIS per acre.	Stream reaches forest wide	5 years	CPW
2.5.5 An adequate range of stream flow provides for the long-term maintenance of physical habitat features. Channel features, including bank stability, width-to-depth ratio, pool/riffle ratio, pool depth, slope, sinuosity, cover, and substrate composition, are commensurate with those expected to occur under natural ranges of stream flow. 2.5.6 Water flow conditions in streams, lakes, springs, seeps, wetlands, fens, and aquifers support functioning habitats for a variety of aquatic and semi-aquatic species and communities.	2.5.14 Annually, evaluate five streams on NFS lands for adequacy of instream flows sufficient to maintain population viability and otherwise achieve LRMP direction.	H	Number of regulated or flow-impacted streams evaluated for consistency with standard 2.5.18.	Stream reaches forest wide	Annually	Colorado Department of Water Resources, CPW

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.5.9 Aquatic systems are connected in a manner that avoids fragmentation of aquatic habitats and isolation of aquatic species. Connectivity between water bodies provides for all life history functions of aquatic species except where barriers are beneficial and necessary to achieve conservation goals for certain aquatic species.</p>	<p>2.5.16 Over the life of the LRMP, connect at least 8 miles of fragmented stream habitat on SJNF lands to provide for aquatic species movement.</p>	L	Number of road crossings or other features that may preclude fish passage.	Project	5 years	
<p>2.5.4 Channel characteristics, water quality, flow regimens, and physical habitat features are diverse and appropriately reflect the climate, geology, and natural biota of the area.</p>	<p>2.5.15 Annually, enhance or restore at least 3 miles of stream habitat on SJNF lands to maintain or restore the structure, composition, and function of physical habitat for USFS Sensitive Species, or USFS MIS species.</p>	M	Number of structures and treatments. Effectiveness monitoring for existing habitat treatments to ensure proper function and identify maintenance needs.	Project	Every 5 years	

Table 4.1.5: Water Resources

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.6.1 State water quality standards and anti-degradation rules are met and State-classified water uses are supported for all water bodies</p> <p>2.6.2 Water quality for impaired water bodies on the State’s 303(d) list move toward fully supporting State-classified uses.</p> <p>2.6.3 State “Outstanding Waters” within the planning area maintain the high levels of water quality necessary for this status.</p> <p>2.6.5 Water from SJNF lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds (as defined in FSM 2542). Enhancement may be achieved by watershed restoration or by other activities.</p>	<p>2.6.19 Every 5 years rehabilitate 10 or more acres to reduce erosion and sedimentation delivery to water bodies on both BLM and USFS lands. For USFS lands, do the work in priority watersheds, including those with water bodies listed for sediment impairment or that have TMDLs established for sediment.</p> <p>2.6.20 Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).</p>	H	Acres restored. TMDLs completed. BMPs implemented and effective.	Project or watershed—BMP monitoring annually	5 years	CDPHE, EPA
<p>2.6.4 Watersheds within the planning area containing saline soils exhibit stable upland, riparian, and channel conditions that produce water quality as close as possible to reference conditions (as defined in FSH 2509.25); they produce the lowest possible saline contributions to the upper Colorado River (see Appendix I for saline watersheds).</p> <p>2.6.17 All approved water developments that involve the use of the SJNF lands are permitted pursuant to applicable federal authorizations.</p>	<p>2.6.20 Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).</p>	M	Acres restored. BMPs implemented and effective.	Project	5 years	EPA

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.12.6 Management activities on the SJNF protect biological crust and control dust in order to minimize impacts of dust-on-snow events.</p> <p>2.6.17 All approved water developments that involve the use of the SJNF lands are permitted pursuant to applicable federal authorizations.</p>	<p>2.6.20 Over the implementation-life of the LRMP, actively participate in the development of all of the TMDL determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies within the planning area (both BLM and USFS lands).</p>	L	Acres restored. BMPs implemented and effective.	Project	5 years	
<p>2.6.8 Historically disturbed and degraded stream channels recover through floodplain development, establishment of riparian vegetation with correct structure, composition, and function, and stable channel geomorphic characteristics.</p>	<p>2.6.21 Over the life of the Plan, BMPs will be implemented to minimize management impacts to water quality on BLM and USFS lands. The effectiveness of BMPs will be improved if necessary through adaptive management.</p> <p>2.6.22 Annually, treat approximately 20 acres or more in USFS Priority Watersheds in order to improve poor watershed conditions or maintain good watershed conditions. The goal is to move a watershed from an impacted condition class to a better condition class, or to maintain a good condition class.</p>	M	Acres restored. Watersheds moved to better condition class. Miles of road decommissioned.	Watershed	Annual	EPA, CPW, BLM, National Park Service, private landowners
<p>2.6.10 Potentially usable aquifers and water-bearing intervals possessing groundwater of quality and/or quantity that could provide multiple-use benefits, maintain water quality at natural conditions.</p>	<p>Maintain water quality at natural conditions.</p>	M	Natural conditions (chemistry, quantity) maintained.	Project	5 years	Oil/Gas operators, water right holders

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.6.12 Upland areas function properly and do not contribute to stream-channel degradation.</p> <p>2.6.13 The majority of undeveloped and unregulated or free-flowing streams within the planning area are retained in their current undeveloped condition; they provide potential reference conditions and offer unique opportunities for aquatic habitat, recreation, species conservation, and pleasing aesthetics.</p> <p>2.6.14 The overall function and integrity of streams impacted by water developments are adequately protected for their baseline ecological and recreational values. This is accomplished by providing for adequate in-stream flows as part of water-development planning for existing or new water-development projects. This includes sustaining the ecological processes dependent upon flow within the impacted watersheds.</p> <p>2.6.15 In unique cases where water is transferred from one catchment to another, water lost (i.e., there is no return flow) from watersheds as a result of water transfer does not adversely alter or impact the aquatic ecology of the watershed. Conversely, aquatic ecology and stability of the watersheds receiving imported water are not adversely impacted.</p> <p>2.6.17 All approved water developments that involve the use of the SJNF are permitted pursuant to applicable federal authorizations.</p>	<p>2.6.25 Over the implementation-life of the LRMP, all consumptive use water rights owned by the BLM and USFS are put to beneficial use and that use can be documented.</p> <p>2.6.26 Based on review of monthly water court resumes, enter into any water court case necessary to protect BLM or USFS water rights and water-dependent resources.</p>	<p>M</p>	<p>Water quantity measurements. Area and percent of water bodies, or stream length, with significant change in physical, chemical, or biological properties from reference condition.</p>	<p>Watershed; project</p>	<p>10 years</p>	

Table 4.1.6: Rangeland Management and Livestock Grazing

Desired Condition: Livestock Grazing	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.7.1 Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact.	Complete NEPA compliance on all active USFS allotments (as guided by the USFS Rescissions Act of 1995). Conduct periodic reviews of analyses and decisions in order to ensure that NEPA-based decisions stay current and sustainable for all permitted livestock grazing.	H	Numbers of grazing allotments with current NEPA decisions; total acres of public lands under term grazing permits	Planning area	Annually	Infrastructure database (INFRA)
	2.7.10 Within 15 years, working with partners and cooperators, reconstruct 10%–15% of priority structural range improvements in order to maintain infrastructure integrity.	M	Numbers/miles of range improvements constructed/reconstructed	Planning area	5 years	INFRA, grazing permittees
2.7.5 Rangelands provide diverse, healthy, and sustainable plant communities and conserve soil quality.	Annually, conduct prescribed monitoring activities on at least 10% of active allotments by priority. Ensure all allotments are adequately monitored on a rotating basis. Use monitoring information to make management changes using adaptive management principles.	H	Acres of long-term monitoring accomplished	Project level and/or planning area	Annually	Performance Attainment System (PAS), grazing permittees
	2.7.9 Annually administer at least 25% of active grazing allotments to standard on a priority basis ensuring that all active grazing allotments during the life of the plan receive appropriate administration. Work with grazing permittees and peers to resolve livestock grazing management issues. Take appropriate administrative action as needed to improve livestock grazing management.	H	Acres of rangeland administered to standard	Project level	Annually	INFRA, grazing permittees

Table 4.1.7: Invasive Species

Desired Condition: Invasive Species	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area, and are not influencing native populations or ecosystem function.	2.8.6 Within 15 years, contain priority Class B invasive species identified in the Invasives Species Action Plan within the SJNF.	H	Acres of noxious weeds inventoried, treated, and monitored	Planning area	Annually	PAS, cooperators, contractors, FACTS
	2.8.7 Within 15 years, increase annual treated acres of noxious weeds to 10% of known acres infested.	M	Acres of noxious weeds inventoried, treated, and monitored		5 years	PAS, cooperators, contractors, FACTS
	2.8.8 Within 15 years, annual backcountry treatment (including Wilderness Areas and WSAs) is 10 to 15% of the total annual noxious weed treatment target.	M	Acres of noxious weeds inventoried, treated and monitored	Planning Area	5 years	PAS, cooperators, FACTS
	2.8.9 Over the life of the plan eradicate newly established invasive species especially Colorado Class A noxious species.	H	Acres/species of newly established Colorado Class A noxious weeds	Planning Area	Annually	PAS, cooperators, contractors, FACTS

Table 4.1.8: Timber and Other Forest Products

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.1 Forest vegetation management that results in meeting needs or demands for forest product offerings (commercial, personal, or other use) will be done in a manner that maintains or improves ecosystem function, resilience, and sustainability;	2.9.5a Within 10 years, conduct thinning – with an emphasis on restoration, and fuels reduction, of altered forest types -- in the ponderosa pine and warm-dry mixed-conifer vegetation types on approximately 15,000 to 20,000 acres of SJNF lands.	M	Pre- and post-treatment inventory data; acres, forest products, and associated volumes (e.g., centum cubic feet (CCF), cords, green tons, teepee poles)	SJNF -- forest wide	Every 5 years	Databases of record (e.g., FACTS, Timber Information Manager (TIM); contractors, purchasers, permittees (commercial and personal-use)
	2.9.5b Within 10 years, emphasize selection harvests in cool-moist mixed-conifer and spruce-fir vegetation types on approximately 2,500 to 5,000 acres of SJNF lands.	M	Pre- and post-treatment inventory data; acres, forest products, and associated volumes	SJNF -- forest wide	Every 5 years	databases of record (e.g., FACTS, TIM); contractors, purchasers
	2.9.5c Within 10 years, utilize coppice harvest (clearcuts with regeneration by sprouting) in aspen and cool-moist mixed-conifer forest types on approximately 4,000 to 5,000 acres of SJNF lands.	M	pre- & post-treatment inventory data; acres, forest products & associated volumes	SJNF -- forest wide	Every 5 years	databases of record (e.g., FACTS, TIM); contractors, purchasers

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.1 Forest vegetation management supports, at least, the current level of economic activity in the local timber industry; provides economic or social support to local communities; ensures current and future needs for Native American tribal use, including that associated with special forest products (e.g., teepee poles)	2.9.6 Meet or exceed average annual timber product offerings from SJNF lands, to local timber industries, publics, and other users (including Native Americans), as displayed in Tables 2.9.1 and 2.9.2 over the life of the LRMP.	H	Sales data for timber products; associated volumes (e.g., CCF), or numbers, for non-convertible products (e.g., Christmas trees)	SJNF – forest wide	Annually	TIM
2.9.1 Forest vegetation management... (continued) utilizes, to the fullest extent practicable, potential products including sawtimber, poles, topwood, or slash (like limbs, foliage)	2.9.7 Every 3 years evaluate utilization of forest products from SJNF or TRFO contracts and permits that result in product sales or usage.	L	Volume sold and volume removed (scaled contract volumes), on-site utilization; CCF or green tons, site or contract inspection reports	Planning area	Every 3 years	cruise and scaling data from contracts, Pagosa Area Long Term Stewardship Contract, Contractor records; TIM
2.9.1 Forest vegetation management... (continued) efficiently balances or reduces costs of implementation of treatment activities	2.9.8 Every 3 years compare, contrast, and evaluate costs of implementation of timber management projects.	M	Project costs and revenues; and other non-monetary measures	Planning area	Every 3 years	WorkPlan System; acquisition payments; Timber Sale Accounting
2.9.1 Forest vegetation management... (continued) anticipates climate-related plant succession changes (such as favoring heat- or drought-resistant tree species as leave trees, or in reforestation)	2.9.9 Every 3 years review silvicultural prescriptions for incorporation of strategies that anticipate potential plant succession changes relative to warmer and/or drier forested conditions	L	Compare pre- and post-treatment silvicultural prescriptions; appropriate (scientifically based) silvicultural methods	Planning area	Every 3 years	Silvicultural prescriptions; reconnaissance data; post-treatment data
2.9.2 USFS lands classified as “suitable” for timber production have a regularly scheduled timber harvesting program 2.9.3 Forest Service lands classified as “not suitable” for regularly scheduled timber production (but where timber harvesting could occur for other multiple-use purposes) have an irregular, unscheduled timber harvesting program	2.9.10 Every 10 years assess timber suitability for forested lands on the SJNF	H	Timber suitability categories and criteria; FSVeg polygons and associated acres, harvesting cost/revenue data	SJNF -- forest wide	Every 10 years	FSVeg database; Forest Vegetation Simulator and inventory data; timber management cost data

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.9.4 Reforestation activities on Forest Service/BLM lands use native tree species germinated from locally collected seed stock to improve the resiliency of forest ecosystems.	2.9.11 Annually review seed inventories to ensure adequate seed from locally collected native tree species is available for planned reforestation activities on Forest Service/BLM lands.	H	Reviews completed, reforestation plans implemented; seed inventories and source information	Planning area	Annually	SJNF Tree Improvement Plan; FS Bessey Nursery seed inventory; other seed inventories and cooperating nurseries

Table 4.1.9: Fire and Fuels Management

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.11.1 Firefighter and public safety concerns are met for all fire management and fuel treatment projects.	2.11.1 Firefighter and public safety concerns are met for all fire management and fuel treatment projects.	H	Measure of Lost Time Accidents	Planning area	Annually	Dispatch and partners including the BLM, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service
2.11.2 Wildfire behavior in the WUI (in and around developed areas and communities) does not result in damage to property, and protects public safety.	2.11.10 Annually, for the next 10 years, complete an average of 7,000 acres of hazardous fuels reduction in the WUI.	M	Acres of fuel reduction by type	Planning area	Annually	Natural Resource Manager (NRM) database; FACTS database; National Fire Plan Operations and Reporting System (NFPORS), BLM
2.11.3 Wildland fire management maintains a balance between fire suppression and use of wildland fire (including both prescribed fire and natural ignitions) to regulate fuels and maintain forest ecosystems in desired conditions.	2.11.12 The wildland fire response on both SJNF and TRFO lands will include evaluations for immediate suppression, management for resource benefit, or a combination of both actions to be taken.	H	Area and percent of forest affected by abiotic agents (e.g., fire, storm, land clearance) beyond reference conditions. Acres of wildland fire	Planning area	Annually	NRM database and partners including the BLM, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.11.4 Use of wildland fire and fuels reduction treatments creates vegetative conditions that reduce the threat to real property and infrastructure from wildfire.	2.11.11 Annually, for the next 10 years, complete an average of 4,000 acres of fuels reduction and resource enhancement, utilizing Fire Managed for Resource Benefit on SJNF lands	H	Fire Regime Condition Class (FRCC) in ponderosa pine; dry mixed-conifer forests – USFS; mixed montane shrublands - USFS and BLM; pinyon - juniper woodlands - USFS and BLM.	Planning area	Annually (Activities Layer); 10 years (FRCC)	GIS analysis using FRCC maps and USFS Activities Layer to assess acreage restored. Compare FRCC maps over time to determine change and rate of change. Landscape, Fire and Resource Management Planning Tools (LANDFIRE) database.
2.11.5 The WUI will have defensible space and dispersed patterns of fuel conditions that favorably modify wildfire behavior and reduce the rate of wildfire spread in and around communities-at-risk.	2.11.10 Annually, for the next 10 years, complete an average of 7,000 acres of hazardous fuels reduction in the WUI.	M	Acres of fuel reduction by type	Planning area	Annually	FACTS, NFPORS, records from cooperators
2.11.6 Major vegetation types reflect little or no departure from historic range of variation of fire frequency and intensity (e.g., reflect fire regime condition class 1).	2.11.11 Annually, for the next 10 years, complete an average of 4,000 acres of fuels reduction and resource enhancement, utilizing fire managed for resource benefit.	M	FRCC in ponderosa pine; dry mixed conifer forests, mixed montane shrublands	Planning area	Annually, with 5- and - 10-year analysis	FACTS, NFPORS, records from cooperators, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, Mesa Verde National Park, and Colorado State Forest Service

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.11.7 Use planned and unplanned fire ignitions to increase resiliency and diversity across all forest and rangeland vegetation types.</p> <p>2.11.8 Reintroduce fire to increase the resistance and resiliency of the warm dry mixed-conifer forest and ponderosa pine forest types in landscape such as Hermosa and Piedra areas.</p> <p>2.11.9 The occurrence of low-elevation fires burning upward into spruce-fir forest will increase over time to promote the heterogeneity of spruce-fir forests.</p>	<p>2.11.12 The wildland fire response on both SJNF and TRFO lands will include evaluations for immediate suppression, management for resource benefit, or a combination of both actions to be taken.</p>	<p>H</p>	<p>Number of fires and response taken</p>	<p>Planning area</p>	<p>Annually</p>	<p>Durango Dispatch Annual Report; Mesa Verde National Park, Southern Ute Indian Tribe, Ute Mountain Ute Tribe, BLM</p>

Table 4.1.10: Air Quality

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.12.1 Air quality in the Weminuche Wilderness Class I Area maintains natural conditions. Indicators of natural conditions include air quality–related values of visibility, water and snow chemistry, precipitation/atmospheric chemistry, soils chemistry, and aquatic/terrestrial biota.</p> <p>2.12.2 Air quality for the Class II Areas within the planning area are maintained or improved with respect to pollutant concentrations so that human health and the integrity of associated aquatic and terrestrial ecosystem components are protected.</p> <p>2.12.5 Visibility in the Weminuche Wilderness continues to improve, so that best natural conditions are achieved.</p>	<p>2.12.8 For the Weminuche Wilderness Class 1 Area, improve air quality so that flora and fauna AQRVs that are at risk (including lichens, amphibians, and aquatic organisms) recover to a level that is within the limits of acceptable change (compared to natural conditions) by the next planning period so that there is no humanly perceptible change in visibility (visual range, contrast, coloration) from that which would have existed under natural conditions (conditions substantially unaltered by humans or human activities).</p> <p>2.12.9 Over the implementation-life of the LRMP on both BLM and USFS lands, prevent or reduce the atmospheric deposition of nitrogen and sulfur and allow no more than a 10% change from established baseline for lakes with an ANC ≥ 25 $\mu\text{eq/L}$, and for lakes with an ANC < 25 $\mu\text{eq/L}$ allow no more than 1 $\mu\text{eq/L}$ decrease in ANC.</p> <p>2.12.10 Over the implementation-life of the LRMP, prevent or reduce airborne nutrient and mercury deposition impacts to sensitive high-elevation lakes in the Weminuche Wilderness Class I Area; allow no detectable mercury, no more than 2 $\mu\text{eq/L}$ of ammonium, and no late summer nitrate.</p>	H	AQRVs; these include water quality, visibility, lichens, soils, aquatic organisms, flora, etc., within limits of acceptable change. Air quality maintained at better than State air quality standards.	SJNF and TRFO	5 years	CDPHE, National Park Service, BLM, EPA
<p>2.12.6 Management activities on the SJNF control dust in order to minimize impacts of dust-on-snow events.</p>	<p>Prevent or reduce particulate pollution (see Guideline 2.12.20)</p>	H	Meet air quality standards, reduce atmospheric deposition of pollutants, reduce particulate pollution (dust). Visibility AQRV within limits of acceptable change.	SJNF and TRFO	5 years	CDPHE, National Park Service, BLM, EPA

Table 4.1.11: Access and Travel Management

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.13.1 The transportation system within the SJNF planning area consists of roads, high-clearance or primitive roads, trails, and bridges that are fiscally sustainable and safe as appropriate for the designated use or desired user experience; they allow for the use of, and enjoyment by, the public, and they meet resource management objectives. Sufficient condition surveys and inspections are conducted to promote road safety and to prioritize road maintenance expenditures.</p> <p>2.13.2 The SJNF transportation system provides reasonable and legal access for resource management and recreation; it is dynamic and adaptable to resource and user needs.</p> <p>2.13.5 The road and trail system within the SJNF has adequate destination signage, mapping, and route markers to assist transportation system users in navigating throughout the planning area.</p> <p>2.13.12 Transportation system components on the SJNF are designed, constructed, and maintained to avoid encroaching onto streams and/or onto riparian areas and wetland ecosystems in ways that impact channel fluctuation or channel geometry (the relationships between channel discharge and channel cross-sectional factors, such as area, width, and depth). Sediment delivery from the transportation system does not measurably impact pool frequency, pool habitat, and/or spawning habitats.</p>	<p>2.13.17 The SJNF will perform maintenance activities annually on 75% of roads maintained for passenger vehicles (NFS maintenance level 3, 4, and 5).</p> <p>2.13.20 The SJNF performs the required schedule of condition surveys for use in prioritizing road maintenance expenditures.</p>	<p>H</p>	<p>Miles of passenger car roads improved</p> <p>Miles of passenger car roads maintained</p> <p>Number of conditions surveys completed</p>	<p>SJNF planning area</p>	<p>5 years</p>	<p>SJNF NFS Source: NRM database roads and trails</p> <p>Annual condition surveys and road and trail inspections</p>

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.13.6 The public has access to information about the SJNF transportation systems (including specific travel route designations, available recreational opportunities, environmental stewardship guidelines, and safe travel information).</p> <p>2.13.7 Motorized use on the SJNF occurs only on designated roads and trails, as well as in small designated open areas (except as exempted by 36 CFR Part 212.51). No new unauthorized or user-created routes develop within the SJNF. Any addition of new designated routes to the transportation system will be analyzed using the appropriate planning process and level of environmental analysis.</p> <p>2.13.8 Roads and trails within the SJNF that are identified for closure are decommissioned and reestablished with native vegetation cover.</p>	<p>2.13.19 Travel management plans are developed in accordance the designation criteria in 36 CFR 212, Subpart B, for NFS lands. Routes that are not included in the designated motorized transportation system will be evaluated for their resource impact potential. Those with high potential for resource impacts will be prioritized for decommissioning as part of the implementation plan for each individual travel management plan decision. Each implementation plan will identify those routes prioritized for decommissioning, the method(s) that may be used, and a schedule for completion.</p>	H	<p>Travel management plans completed</p> <p>Miles of roads prioritized for decommissioning</p> <p>Miles of roads decommissioned</p>	SJNF	Annually	SJNF NFS Source: NRM database roads and trails
<p>2.13.9 Roads on SJNF are managed by the appropriate public road authority when any one of the following conditions exists: the road serves predominantly non-SJNF traffic; the road is necessary for mail, school, and/or other local governmental purposes; the road provides year-long residential access to private property within, or adjacent to, the planning area.</p> <p>2.13.10 Travel management plans are complete for all SJNF within 5 years of adopting this LRMP. Travel management planning remains a continuous process designed to improve the transportation system on the SJNF.</p> <p>2.13.11 Motorized and non-motorized users, as well as local, state, tribal, and other federal agencies, are actively engaged in travel management planning, route designation and implementation, and route monitoring on the SJNF.</p>	<p>2.13.16 Transfer jurisdiction of roads identified through travel management planning as having predominant use that is inconsistent with the mission of the jurisdictional managing authority to a managing authority whose mission is consistent with the road use and is willing to accept the road transfer. The SJNF identify in each travel management planning decision those roads, if any, that are priority for jurisdictional transfer. The SJNF will transfer ownership to the appropriate managing authority of 50% of the roads identified as priority for jurisdictional transfer through travel management decisions made up to the initial 5-year anniversary of the LRMP implementation. These jurisdictional transfers will be completed within 15 years of the LRMP implementation.</p>	M	Miles of roads transferred to the appropriate managing authority jurisdiction.	SJNF planning area	Annually	La Plata, Dolores, Montezuma, San Juan, and Archuleta Counties.

Table 4.1.12: Recreation, Scenery, and Wilderness

Desired Condition—Recreation and Scenery	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.14.1 Activities are regulated primarily in order to protect the quality of the recreation settings and benefits, as well as to protect natural and cultural resources. Managers monitor conditions and implement management strategies in order to maintain desired setting characteristics.</p>	<p>Ensure public is getting these experiences on the SJNF.</p>	<p>H</p>	<p>National Visitor Use Monitoring Program</p>	<p>Forestwide</p>	<p>5 years</p>	<p>Contract survey</p>
<p>2.14.14 Much of the planning area has an ROS setting of Semi-Primitive and Roaded Natural.</p> <p>2.14.28 In developed recreation sites, the USFS and BLM provide a wide range of visitor information, education, and interpretation consistent with their interpretive and conservation education strategy.</p>	<p>Provide for public health and safety and meet minimum standards for site operations and maintenance.</p>	<p>H</p>	<p>INFRA database; concessionaire annual review ratings; occupancy rates; visitor comment forms</p>	<p>Forestwide</p>	<p>Annual</p>	<p>Concessionaire, in-house data collection, public comments</p>
<p>2.14.2 Established road and trail travel corridors offer high-quality scenery. Developed recreation facilities (including trailheads) provide relatively easy access for visitors, enabling them to enjoy a wide range of recreation experiences.</p> <p>2.15.3 Views from developed sites, roads, trails, and viewpoints of concern are predominantly within natural-appearing landscapes. Views within developed recreation sites may appear heavily altered (due to recreation support facilities, recreation developments, hazard tree management, etc.).</p>	<p>Ensure scenery is protected via plan guidance and future project NEPA screening.</p>	<p>M</p>	<p>Examine one or more NEPA actions with potential to impact scenic values; assess adherence to scenic and plan guidance</p>	<p>Project specific</p>	<p>5 years</p>	<p>In-house, public comments</p>

Table 4.1.13: Heritage

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.16.1 Significant heritage and cultural resources, such as USFS Priority Heritage Assets and sites on the NRHP, are maintained in good to excellent physical condition. Significant cultural values are protected or preserved. Heritage and cultural sites are preserved and stabilized, and may be available for interpretation and research; they may have site-specific management plans. Sites are protected from physical damage and excessive wear and tear resulting from visitor use.</p> <p>2.16.8 Select historic cabins are restored and adaptively reused for appropriate recreation and/or for interpretive use.</p>	<p>2.16.13 Over the implementation-life of the LRMP, protect/preserve/stabilize at least seven significant heritage/cultural resources that have identified deferred maintenance needs that if not addressed will result in loss of the resource.</p> <p>2.16.16 Over the implementation life of the LRMP, implement the Anasazi National Register District Monitoring Plan and new site monitoring plans for the Lost Canyon and Spring Creek National Register Districts.</p>	H	Heritage program managed to standard and Secretary’s report to Congress: Number of heritage/cultural sites stabilized	Planning area	10 years	Colorado State Historic Preservation Office, Tribes, volunteers, schools, State Historical Fund, grants
<p>2.16.6 A management presence at key heritage and cultural resource sites is provided to protect sensitive or heavily visited sites from inappropriate use or vandalism.</p> <p>2.16.10 Looting of sites is reduced through increased public awareness and education related to cultural resources. Vandalism at sites is promptly remedied to prevent recurrence.</p>	<p>2.16.14 Annually, post protective signage and/or surveillance cameras on at least one heritage and cultural resource sites that is at-risk for vandalism.</p>	H	Use of protective signage Tracked in INFRA Heritage modules	Planning area	Annually	San Juan Mountains Association
<p>3.16.1 Archaeological sites are protected and preserved for their scientific, educational, social, and cultural values.</p>	<p>3.16.9 Within 5 years, create a dispersed recreation plan that is congruent with desired conditions and that would be incorporated into the management plan for the Falls Creek Archaeological Area.</p> <p>3.16.10 Within 1 year, implement a site-steward program.</p> <p>3.16.11 Within 5 years, develop and implement a rock art preservation plan in order to mitigate deterioration.</p>	H	Heritage program managed to standard and Secretary’s report to Congress: Development of CRMP Tracked in INFRA Heritage modules	Falls Creek	5 years	SJNF

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>3.16.5 Native American tribes and Pueblos are consulted with regard to the development of appropriate off-site educational materials.</p>	<p>3.16.12 Within 5 years, develop appropriate and sensitive off-site interpretive and educational materials. Make the information from the collection analyses available to researchers.</p>	H	<p>Heritage program managed to standard and Secretary’s report to Congress: Interpretive materials developed</p> <p>Tracked in INFRA Heritage modules</p>	Falls Creek	5 years	SJNF, Native American Tribes and Pueblos, grants
<p>3.17.1 Chimney Rock National Monument is managed in an exemplary manner in accordance with the National Monument Proclamation.</p> <p>3.17.2 Native Americans tribes and Pueblos are consulted with regard to the development of appropriate management and interpretation; are allowed access to the Monument for traditional and ceremonial uses; and their values are respected and preserved.</p> <p>3.17.3 Compatible recreational opportunities for the public are provided, in accordance with the National Monument Proclamation.</p>	<p>3.17.4 Within 3 years, develop a comprehensive management plan for the Chimney Rock National Monument.</p>	H	<p>Heritage program managed to standard and Secretary’s report to Congress: Interpretive materials developed</p> <p>Tracked in INFRA Heritage modules</p>	Chimney Rock	5 years	SJNF, Chimney Rock Interpretive Association, Native American Tribes and Pueblos
<p>3.26.1 McPhee offers diverse recreation for communities while, at the same time, preserving archaeological and paleontological resources.</p> <p>3.26.8 The SJNF partners with the Bureau of Reclamation to address impacts to archaeological resources and NAGPRA issues.</p>	<p>3.26.13 Within 5 years implement archaeological monitoring plan.</p>	H	<p>Heritage Program Managed to Standard & Secretary’s Report to Congress- sites monitored and protected</p> <p>Tracked in INFRA Heritage modules</p>	McPhee	5 years	SJNF, Bureau of Reclamation

Desired Condition–Heritage	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>3.26.4 Interpretive and educational opportunities enhance visitor experience and increase stewardship of sites.</p>	<p>3.26.10 Within 5 years, implement site-steward and “adopt-a-site” programs.</p> <p>3.26.11 Over the implementation-life of the LRMP, develop two interpretive trails.</p>	H	<p>Heritage Program Managed to Standard & Secretary’s Report to Congress- sites monitored and protected; interpretive materials developed</p> <p>Tracked in INFRA Heritage modules</p>	McPhee	<p>5 years—site stewards</p> <p>10 years—interpretive trails</p>	SJNF, San Juan Mountains Association
<p>3.26.5 User-made trails are rerouted or eliminated in order to avoid impacts to archaeological and paleontological sites.</p>	<p>3.26.14 Within 3 years reroute or close user-made trails that are impacting archaeological resources.</p>	H	<p>Heritage program managed to standard and Secretary’s report to Congress: Sites protected</p> <p>Tracked in INFRA Heritage modules</p>	McPhee	3 years	SJNF, San Juan Mountains Association, Southwest Conservation Corps
<p>3.26.9 Partner with research organizations to test archaeological sites and conduct data recovery if sites are being impacted.</p>	<p>3.26.12 Within 10 years, test two sites for subsurface archeological deposits.</p>	H	<p>Heritage program managed to standard and Secretary’s report to Congress: Sites evaluated, research, public information</p> <p>Tracked in INFRA Heritage modules</p>	McPhee	10 years	SJNF, Crow Canyon Archaeological Center, universities, colleges, interns, San Juan Mountains Association, grants

Table 4.1.14: Paleontology

Desired Condition	Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
2.17.1 Acquiring better knowledge of paleontological resources on SJNF lands is emphasized.	2.17.5 Over the life of the plan, identify and document two paleontological sites.	M	Number of sites documented	Planning area	10 years	Colleges, universities
2.17.4 The McPhee Reservoir sauropod locality is actively managed through a long-term stewardship agreement to preserve dinosaur partial skeletons actively eroding along margin of reservoir. Known and newly discovered paleontological localities are monitored and managed using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	2.17.6 At a minimum, monitor one paleontological locality per year.	M	Number of site visits	Planning area, McPhee Reservoir	Annually	Colleges, universities
Ensure that paleontological resources are considered during the planning process using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	2.17.7 Where feasible conduct fossil resource inventories in areas where they are needed on a project basis over the life of the plan.	H	Acres of inventory	Planning area	Annually	Colleges, universities
2.17.2 Paleontological resources are available for appropriate scientific, educational, and, where appropriate, recreational uses by present and future generations.	2.17.8 Increase opportunities for outdoor recreational experiences and volunteer projects focused on fossil resource management, and increase the number of partnerships with educational and research institutions.	M	Number of partnerships	Planning area	Annually	Colleges, universities

Table 4.1.15: Minerals and Energy

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.19.2 Mineral materials (including gravel and decorative stone) are available to support resource management needs, personal and hobby use, and commercial pursuits.</p> <p>2.19.4 Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.</p>	<p>Inspect and verify production at mineral material sites</p> <p>2.19.8 Process requests for mineral materials in a timely manner consistent with plan direction and applicable laws. Identify areas suitable for and establish common use area(s) and/or community pits to provide sources of mineral materials to the public.</p>	M	<p>Number of inspection reports;</p> <p>days to process applications</p>	Planning area	5 years	
<p>2.19.4 Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.</p>	<p>Inspect locatable mineral sites for surface management</p>	M	<p>Number of inspection reports</p>	Planning area	5 years	
<p>Potential social and resource impacts from the development of the Paradox Basin play area are minimized by phasing oil and gas leasing to achieve orderly economic development of portions of the play zones at any given time.</p> <p>2.19.5 All oil and gas well fields starting at the field development stage, and all other established well fields where practicable maximize the co-location of facilities to minimize construction footprint and reduce tailpipe emissions.</p>		L	<p>Number of APDs processed annually</p> <p>Acres of new ancillary facilities within the Paradox Basin Planning Area annually</p>	Paradox Basin	5 years	

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.19.3 Ground disturbance from development of oil and gas fields is minimized by centralizing facilities, requiring multiple wells per pad, and minimizing the road system required to access facilities.</p> <p>2.19.5 All oil and gas well fields starting at the field development stage and all other established well fields where practicable maximize the collocation of facilities to minimize construction footprints and reduce tailpipe emissions.</p> <p>2.19.6 Oil and gas leasing and development activity on the SJNF occurs in an orderly manner to minimize impacts to lands and resources and increase efficiency of operations.</p>	<p>2.19.7 Over the next 20 years, centralize facilities and engines to minimize the number of well head engines and optimize well engines so they use the minimum cumulative horsepower to obtain the maximum efficiency for all well fields beginning at the field development stage and all other established well fields where practicable.</p>	H	Determine whether impacts were understated or overstated, if mitigation measures are working as intended, if there are unforeseen impacts and whether the impacts can be adequately mitigated.	SJNF	5 years	Industry, BLM

Table 4.1.16: Abandoned Mine Lands

Desired Condition	Plan or Monitoring Objective	Monitoring Priority	Performance Measures; Indicators	Scale	Frequency of Reporting	Sources and/or Partners
<p>2.21.3 Mine waste repositories are protected and physical safety closures are protected or replaced during any USFS-authorized actions.</p>	<p>2.21.9 On all SJNF lands, close or mitigate high-priority sites over the life of the LRMP. On SJNF lands, newly discovered sites will be prioritized for closure or mitigation based on hazard.</p>	H	Number of safety closures	Planning area	5 years	Colorado Division of Reclamation Mining and Safety
<p>2.21.1 Abandoned mine reclamation within the planning area contributes to water quality improvement and to historic resource protection.</p> <p>2.21.6 The AML program coordinates with affected parties, partners, and stakeholder groups on AML projects.</p>	<p>2.21.7 Stabilize, rehabilitate, or restore AML on priority sites on an annual basis in order to improve water quality and watershed condition.</p>	M	Acres physically and directly improved by AML program annually	Planning area	5 years	EPA, Animas River Stakeholders Group and other watershed groups, Riverwatch

4.2 Tres Rios Field Office Monitoring Plan

4.2.1 Implementation of the LRMP

Implementation of the LRMP begins once the Record of Decision for the Proposed LRMP is signed. Decisions made through the planning process are implemented over the life of the LRMP. Some of the decisions are immediate and go into effect with the Record of Decision, while other decisions would be implemented over time after site-specific environmental review is completed. In addition, specific programs have requirements that must be followed in order to make certain decisions effective. An example of a land use plan decision that requires an additional action for implementation would be a recommendation to withdraw lands from entry under the mining laws. Formal action requiring Secretarial-level review and decision making would follow if the BLM planning process results in a withdrawal recommendation and the applicable regulations in 43 CFR 2300 are followed.

Any future proposals or management actions will be reviewed against the LRMP to determine if the proposal is in conformance with the LRMP. While the FEIS for the TRFO LRMP provides the compliance with NEPA for the broad-scale decisions that are made in the Record of Decision, it does not replace the requirement to comply with NEPA for most site-specific implementation actions.

During the life of the LRMP, the BLM expects that new information gathered from field inventories and assessments, research, other agency studies, and other sources will update baseline data or support new management techniques, BMPs, and scientific principles. To the extent that such new information or actions address issues covered in the plan, the BLM will integrate the data through plan maintenance. In cases where new information would cause a more significant change in planning direction, a plan amendment may be required.

4.2.2 Land Use Plan Implementation Monitoring

Due to staffing and funding levels, monitoring is prioritized consistent with the goals and objectives of the RMP in cooperation with local, state, and other federal agencies.

The TRFO conducts monitoring and evaluation of RMP decisions to measure the effectiveness of the management action and allowable use decisions in achieving the RMP's goal and objectives. Monitoring and evaluation analyzes the current resource conditions as a result of implemented actions and identifies and recommends alternatives or modified actions, as necessary, to reach established objectives and goals. This process provides the optimum means to check the effectiveness of management actions. Because the capability to execute the process at the optimum level can vary from year to year, monitoring will be prioritized. BLM would use data collected by other agencies, local governments, and other sources when appropriate and available.

Plan implementation is a continuous process occurring over the life of the resource management plan that will consider changing circumstances and new information through monitoring. The goal is to maintain a dynamic resource management plan that is evaluated and amended if necessary on an issue-by-issue basis.

4.2.3 Data Collection

In cooperation with local, state, and other federal agencies, the BLM will collect, analyze, and report monitoring data that allow for the determination of cause and effect, conditions, trends, and predictive modeling of land use authorizations. Monitoring methods are implemented to collect data that establish current conditions and reveal any change in the indicators. Monitoring techniques consider when, where, and frequency. The data collected through monitoring provide a variety of information applicable to one or more resource uses. To increase effectiveness, efficiency, and eliminate duplication, monitoring methods should be designed to address as many uses as possible. The BLM will rely upon cooperating agencies for the funding, facilities, and labor to assist in or perform this data collection.

4.2.4 Monitoring

Monitoring is the repeated measurement of activities and conditions over time. Monitoring data gathered over time is examined and used to draw conclusions on whether management actions are meeting stated objectives, and if not, why. Conclusions are then used to make recommendations on whether to continue current management or what changes need to be made in management practices to meet objectives.

Monitoring determines whether planned activities have been implemented in the manner prescribed by the plan. This monitoring documents BLM's progress toward full implementation of the land use plan decision. There are no specific thresholds or indicators required for this type of monitoring.

Monitoring also is used to determine if the implementation of activities has achieved the desired goals and objectives. This requires knowledge of the objectives established in the RMP as well as indicators that can be measured. Indicators are established by technical specialists in order to address specific questions, and thus avoid collection of unnecessary data. Success is measured against the benchmark of achieving desired future conditions established by the plan.

Monitoring is also used to ascertain whether a cause-and-effect relationship exists among management activities or resources being managed. It confirms whether the predicted results occurred and if assumptions and models used to develop the plan are correct. This type of monitoring is often done by contract with another agency, academic institution, or other entity, and is usually expensive and time consuming since results are not known for many years.

4.2.5 Components of the Monitoring Plan

The monitoring plan presented in the tables below contains seven components that link monitoring efforts directly to the plan components presented in this LRMP, and guide monitoring activity for each element of the plan. These components are focused around selected desired conditions and are designed to test relevant assumptions, track relevant changes, and measure management effectiveness and progress towards achieving or maintaining the LRMP's desired conditions.

1. **Program Element:** BLM program elements are defined as specific activities or products for which the BLM captures cost data (i.e., determines cost "drivers," collects activity data, calculates the cost of delivering that activity or product). The description of each program element is followed by its two-letter code.
2. **Frequency of Reporting:** Frequency of reporting describes the timing of monitoring and evaluation efforts. Much data are collected annually, while other data are collected at longer or shorter intervals based on the length of time needed to discern a measureable change.
3. **Desired Conditions:** The desired conditions are selected from Chapters 2 and 3 of the LRMP and serve as the basis for the monitoring plan. These are the "drivers" of the monitoring plan and provide the "questions" that this monitoring plan seeks to answer.
4. **Objectives:** The objectives are projections of measureable and time-specific outcomes or accomplishments that, if achieved, would contribute to maintaining or reaching desired conditions during the life of the LRMP. They relate directly to the desired conditions and are also selected from Chapters 2 and 3 of the LRMP.
5. **Scale:** Scale describes the level of analysis with respect to land size or level of application. This measure is important in describing impacts dealing with habitat heterogeneity and population viability issues, as well as describing cumulative impacts related to, or resulting from, management actions.
6. **Performance Measures and Indicators:** This column identifies indicators that will be used to gauge or track accomplishments that lead the TRFO toward meeting objectives and desired conditions. These indicators provide a measureable quantitative or qualitative parameter.
7. **Sources and Partners:** Potential data sources for information and partners that may be involved in providing input into the monitoring process or identifying areas where research may be needed.

Table 4.2.1: Terrestrial Ecosystems

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Fuels Treatment (MT), Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Monitor Fuels Treatment in Wildland Urban Interface (LC)	10 years 15 years	2.2.1 The composition, structure, and function of terrestrial ecosystems are influenced by natural ecological processes, including disturbance events such as fire, infestations by insects or disease, winds, and flooding.	2.2.47 Within 10 years, inventory and map stand structure changes that have resulted from spruce beetle mortality and wildfire on TRFO lands. 2.2.60 After natural disturbance events or during restoration projects over the next 15 years, increase the variety of native non-commercial tree and shrub species on a minimum of 25 acres of TRFO lands.	Landscape	Acres	Rangeland Improvement Project System (RIPS), NFPORS
Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK), Monitor Fuels Treatment (MT)	15 years 30 years of review at 10-year increments 15 years	2.2.4 Future biodiversity, especially for endangered, rare, or dwindling species, is protected in the face of a changing climate by safeguarding habitats, preserving genetic diversity, and cooperating with seed banking efforts that provide secure, long-term storage of plant genetic resources. 2.2.17 Local seeds of desirable native plant species are available for revegetation and restoration efforts.	2.2.57 Over the next 15 years, secure a reliable source of local seed stock for eight or more native grass, forb, and shrub species (including Arizona fescue (<i>Festuca arizonica</i>)) for use in revegetation and restoration projects on TRFO lands. 2.2.58 Over the life of the LRMP, collect and provide for the long-term storage of local seed from ten vulnerable native grass, forb, and shrub species (including alpine) in order to protect genetic sources. 2.2.60 After natural disturbance events or during restoration projects over the next 15 years, increase the variety of native non-commercial tree and shrub species on a minimum of 25 acres of TRFO lands. 2.2.62 Over the next 15 years, revegetate and reclaim five acres of TRFO lands using native early-successional plant species developed from local plant sources in order to accelerate restoration success.	Landscape	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
<p>Monitor Fuels Treatment in Wildland Urban Interface (LC), Monitor Fuels Treatment (MT), Monitor Terrestrial Habitat (MQ)</p>	<p>5 years</p>	<p>2.2.10 Forested terrestrial ecosystems display a FRCC of 1.</p> <p>2.2.15 Forested terrestrial ecosystems have stand structures and tree species composition that offer resistance and resilience to changes in climate (including extreme weather events) and epidemic insect or disease outbreaks.</p> <p>2.2.22 Ponderosa pine, warm-dry mixed conifer, and cool-moist mixed conifer forest stands in the old-growth development stage that have not been previously harvested are managed for their old-growth values through active or passive management.</p> <p>2.2.23 Ponderosa Pine Forest Desired Condition</p> <p>2.2.24 Warm Dry Mixed Conifer Forest Desired Condition</p> <p>2.2.25 Cool Moist Mixed Conifer Forest Desired Condition</p>	<p>2.2.52 Within 15 years, increase the percentage of ponderosa pine forest in the young development stage from zero to 3% on TRFO lands through the use of mechanical treatments and prescribed fire.</p> <p>2.2.53 Within 15 years, increase the percentage of warm-dry mixed conifer forest in the young development stage from zero to 3% on TRFO lands through the use of mechanical treatments and prescribed or natural fire.</p> <p>2.2.54 Within 15 years, improve the composition, structure, and function of 5,000 acres of ponderosa pine forest through the use of low-intensity fire.</p>	<p>Landscape</p>	<p>Acres of treatment and/or fire size</p>	<p>RIPS, project monitoring, NFPORS</p>

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Fuels Treatment (MT), Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK), Monitor Fuels Treatment in Wildland Urban Interface (LC)	5 years	<p>2.2.12 The abundance and distribution of native grasses in semi-desert grasslands, sagebrush shrublands, pinyon-juniper woodlands, and semi-desert shrublands are maintained or increased.</p> <p>2.2.28 Pinyon-Juniper Woodland Desired Condition</p> <p>2.2.30 Desired conditions for Sagebrush Shrublands</p> <p>2.2.31 Desired conditions for Semi-Desert Shrublands</p> <p>2.2.32 Desired conditions for Semi-Desert Grasslands</p>	<p>2.2.56 Within 15 years, improve the abundance and distribution of perennial native bunchgrasses on 3,000 acres of semi-desert shrublands or grasslands within TRFO.</p>	Landscape	Acres	RIPS, NFPORS
Evaluate Rangeland Health (MJ), Monitor Terrestrial Habitat (MQ), Evaluate Weed Treatments (MK)	10 years	<p>2.2.34 Alpine terrestrial ecosystems sustain their ecosystem diversity. They display a diverse composition of desirable native plant species and vegetation communities (including fellfield and turf types). Invasive plant species are absent or rare.</p>	<p>2.2.58 Over the life of the LRMP, collect seed from 10 local vulnerable grass, forb, and shrub species, including some alpine species, for long-term storage to protect genetic sources.</p> <p>2.2.63 Over the next 20 years, enhance the resiliency of alpine ecosystems and provide refugia for alpine- dependent species on 100 acres of TRFO lands through implementing recreation management plans, completing mine land reclamation, or conducting other management activities.</p>	Landscape and project	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Lake/Wetland Habitat (MN), Monitor Terrestrial Habitat (MQ)	Annually in occupied critical habitat, and once every 5 years in unoccupied critical habitat	<p>2.2.9 Terrestrial ecosystems, including habitat for special status plant species, are productive, sustainable, and resilient, and provide goods and services over the long term.</p> <p>2.2.11 Canyon escarpments, and the terrestrial ecosystems that occur on them, serve as refugia for native biota. These escarpments are associated with the following canyons: Lower Dolores River, Wild Steer, Coyote Wash Spring, and McIntyre. They also include the Mesa Verde Escarpment.</p> <p>2.2.41 Fens, wetlands, and hanging gardens have the water sources and hydrologic systems necessary to support and sustain the special status plant species associated with them.</p> <p>2.2.44 Areas identified as critical habitat or proposed critical habitat for federally listed plant species have the characteristics necessary to provide for the growth and reproduction of the federally listed plant species for which they were designated.</p>	Over the next 10 years, monitor 20 known special status plant species locations and their habitats.	Project and landscape	<p>Acres evaluated; condition of special status species habitat; continued presence of special status species in these habitats.</p> <p>In occupied critical habitat for Pagosa skyrocket, the indicator is the continued presence of the species.</p> <p>In unoccupied critical habitat for Pagosa skyrocket, the indicators are the presence of suitable plant communities, habitat for pollinators, and appropriate disturbance regimes.</p>	Colorado Natural Heritage Program, USFWS
Evaluate Rangeland Health (MJ), Monitor Grazing Allotments (ML), Monitor Terrestrial Habitat (MQ)	5 years	<p>2.2.35 Soil productivity is maintained at or trending towards site potential.</p> <p>2.2.37 Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion.</p> <p>2.2.40 Biological soil crusts are maintained or increased in pinyon-juniper woodlands, sagebrush shrublands, and semi-desert shrublands and grasslands.</p>	<p>2.2.45 Within 10 years, restore or improve soil productivity and soil carbon on at least 5 miles of routes that will be closed or decommissioned on TRFO lands.</p> <p>2.2.59 Use locally produced biochar to sequester carbon, reduce erosion, and enhance soil productivity and water retention on a minimum of 0.5 acre per year on TRFO lands for 5 years.</p>	Project and landscape	Acres	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and Partners
Monitor Terrestrial Habitat (MQ)	Ongoing	2.2.74 Old growth ponderosa pine, old growth pinyon-juniper, and old growth warm-dry mixed conifer forests are more abundant, occupy more acreage, and are well distributed on TRFO lands.	Develop an old-growth database and conduct old-growth inventories in potential old-growth stands of ponderosa pine, warm-dry mixed conifer, and pinyon-juniper.	Project and landscape	Development of an old-growth database	Old-growth database (to be developed)

Table 4.2.2: Terrestrial Wildlife

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory Terrestrial Habitat (CB)	Annual	<p>2.3.1 Wildlife populations are self-sustaining, connected, and genetically diverse across TRFO lands.</p> <p>2.3.3 Invasive exotic wildlife species and diseases do not become established within the planning area. Existing invasive exotic wildlife species and diseases do not spread.</p> <p>2.3.4 Habitat components (e.g., snags and downed logs) are maintained. Unique habitat types (e.g., springs, seeps, willow carrs, caves, and cliffs) support associated flora and fauna (with abundance and distribution commensurate with the capability of the land).</p> <p>2.3.7 Snag and downed wood features occur in quantities that support self-sustaining populations of associated species.</p> <p>2.3.8 Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations.</p>	2.3.29 Inventory and monitoring: Improve knowledge on the distribution of wildlife special status species and their habitats by inventorying habitat and species as identified in the LRMP monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.	Project to planning area (varies)	Acres inventoried	BLM, SJNF, CPW, Colorado Natural Heritage Program

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Apply Shrub/Grass Vegetation Treatments (JA)	Annual		<p>2.3.24 Treat 2,000 or more acres of vegetation on TRFO lands over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area.</p> <p>2.3.26 Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.</p>	Project	Acres treated	BLM
Implement Threatened and Endangered Species Recovery Actions (JP)	Annual	2.3.15 Areas identified as critical habitat or proposed critical habitat for special status wildlife species have the characteristics to support sustainable populations, promoting recovery of the species.	2.3.26 Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.	Project	Recovery actions preformed	BLM, USFWS, San Miguel Gunnison Sage-grouse Working Group
Implement Conservation Actions for Non-ESA Species and Communities	Annual	2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.	<p>2.3.24 Treat 2,000 or more acres of vegetation on TRFO lands over the life of the plan to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area.</p> <p>2.3.27 Nokomis fritillary butterfly: Over the life of the LRMP, restore the hydrologic conditions and plant communities during project implementation at springs or seeps capable of supporting Nokomis fritillary while, at the same time, retaining the water development for livestock or other uses.</p>	Project	Actions performed	BLM

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Terrestrial Habitat (MQ)	Annual	<p>2.3.2 Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance that do not reduce habitat effectiveness.</p> <p>2.3.4 Habitat components (e.g., snags and downed logs) are maintained. Unique habitat types (e.g., springs, seeps, willow carrs, caves, and cliffs) support associated flora and fauna (with abundance and distribution commensurate with the capability of the land).</p> <p>2.3.7 Snag and downed wood features occur in quantities that support self-sustaining populations of associated species.</p> <p>2.3.8 Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations.</p> <p>2.3.9 Ecosystems and habitat conditions for terrestrial wildlife species sensitive to human disturbance are maintained.</p> <p>2.3.10 Vegetation openings created through management actions preserve the natural patchiness inherent in Southern Rocky Mountain ecosystems.</p> <p>2.3.11 Habitat continuity and travel corridors exist and persist to facilitate species movement and establishment into newly suitable areas as a result of changing habitats.</p> <p>2.3.12 Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation.</p> <p>2.3.14 Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for wildlife special status species.</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p>	<p>2.3.29 Inventory and monitoring: Improve knowledge regarding the distribution of wildlife special status species and their habitats by inventorying habitat and species as identified in the LRMP monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.</p> <p>2.3.30 Invasives and disease: Over the life of the LRMP, coordinate with CPW to prevent introductions or spread of fish or terrestrial wildlife species, as needed, where there is potential for negative impacts on wildlife special status species.</p>	Project to planning area (varies)	Acres monitored	BLM, USFS, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Species Populations (MR)	Annual	<p>2.3.1 Wildlife populations are self-sustaining, connected, and genetically diverse across TRFO lands.</p> <p>2.3.2 Big game severe winter range, winter concentration areas, and production areas are capable of supporting populations that meet State population objectives. These areas provide sustainable forage and habitat in areas with acceptable levels of human disturbance that do not reduce habitat effectiveness.</p> <p>2.3.5 Large predator species contribute to ecological diversity and ecosystem functioning.</p> <p>2.3.8 Effective raptor nesting habitat occurs throughout the planning area with abundance and distribution commensurate with the capability of the land to sustain populations.</p> <p>2.3.12 Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation.</p> <p>2.3.14 Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for wildlife special status species.</p> <p>2.3.17 Management actions maintain or improve habitat conditions for special status species, contributing to the stability and/or recovery of these species.</p> <p>2.3.18 Special status species are able to disperse within the planning area and onto adjacent lands, allowing for the interchange between populations and the maintenance of genetic diversity.</p>	<p>2.3.29 Inventory and monitoring: Improve knowledge regarding the distribution of special status wildlife species and their habitats by inventorying habitat and species as identified in the monitoring section over the life of the LRMP. Work with conservation partners in the study, management, and monitoring of these species.</p>	Project to planning area (varies)	Populations monitored	BLM, USFS, CPW, Colorado Natural Heritage Program

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Shrub/Grass Vegetation Treatments (MX)	By project	<p>2.3.10 Vegetation openings created through management actions preserve the natural patchiness inherent in Southern Rocky Mountain ecosystems.</p> <p>2.3.12 Populations are conserved by maintaining or improving habitat availability and quality through the incorporation of conservation strategies and species' habitat needs during project development and implementation.</p> <p>2.3.14 Disturbances from management activities occur at levels that support critical life functions and sustain key habitat characteristics for special status wildlife species.</p>	<p>2.3.24 Treat 2,000 or more acres of vegetation on TRFO lands over the life of the LRMP to improve habitat that supports sustainable populations of terrestrial wildlife across the planning area.</p> <p>2.3.26 Gunnison sage-grouse: Improve habitat for Gunnison sage-grouse when conducting resource management actions within occupied habitat.</p>	Project	Acres monitored	
Monitor Steam/Riparian Habitat (MO)	Annual	<p>2.5.1 Long-term sustainability of aquatic ecosystems is maintained.</p> <p>2.5.2 Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities.</p> <p>2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.</p> <p>2.5.10 All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.</p> <p>2.5.11 Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.</p>		Planning area	Miles	BLM, USFS, CPW
Monitor Species Populations (MR)	Annual	<p>2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.</p> <p>2.5.10 All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.</p> <p>2.5.11 Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.</p>		Planning area	Miles	BLM, USFS, CPW

Table 4.2.3: Riparian and Wetland Ecosystems

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Weed Treatments (MK)	5 years	<p>2.4.1 Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.</p>	<p>2.4.13 Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on TRFO lands currently classified as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.</p> <p>2.4.14 Within 10 years, determine the functional condition of 25 miles on TRFO of riparian area and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998).</p> <p>2.4.16 Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and if needed conduct follow-up treatment to prevent the establishment or spread of other invasive species.</p> <p>2.4.17 Maintain native riparian and upland ecosystems that have been treated to control non-native species on a minimum of 50 miles of TRFO stream reaches over the next 20 years.</p>	Site, project	Acres evaluated, presence or absence of target weed species, success of weed treatment objectives	Southwest Youth Corps, Canyon Country Youth Corps, Western Youth Corps, The Nature Conservancy, Tamarisk Coalition, Walton Family Foundation

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Lake/Wetland Habitat (MN)	10 years	<p>2.4.1 Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.</p> <p>2.4.2 Riparian area and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development.</p> <p>2.4.7 The composition, structure, and function of fens and hanging gardens are intact (including their native plant species, organic soils, and hydrology).</p> <p>2.4.8 Riparian area and wetland ecosystems that contain plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks are protected, have habitat to expand into, and have the water quantity and hydrologic systems necessary in order to support and sustain these communities.</p> <p>2.4.9 Soil productivity is intact on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.10 Long-term levels of soil organic matter and soil nutrients are maintained at acceptable levels on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.11 Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.12 Long term impacts to soils (e.g., erosion, compaction, displacement, puddling, and/or severe burning) from management actions are rare on all riparian area and wetland ecosystems in the TRFO.</p>	<p>2.4.15 Within 15 years, treat three fens with impaired function on TRFO lands.</p> <p>2.4.16 Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and conduct follow-up treatment if needed to prevent the establishment or spread of other invasive species.</p>	Site	Acres monitored, proper function of ecosystems	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Stream Riparian Habitat (MO)	5–10 years	<p>2.4.1 Riparian area and wetland ecosystems have a diverse composition of desirable native hydrophytic plants that are vigorous and self-perpetuating. Invasive plant species are absent or rare.</p> <p>2.4.2 Riparian area and wetland ecosystems have vegetation cover sufficient to catch sediment, dissipate energy, prevent erosion, stabilize stream banks, enhance aquatic and terrestrial wildlife habitat, and promote floodplain development.</p> <p>2.4.3 Forest and shrubland types display hydrophytic trees and shrubs in a variety of size classes; they provide terrestrial and aquatic habitats, stream shading, woody channel debris, aesthetic values, and other ecosystem functions.</p> <p>2.4.4 Woody debris in a variety of sizes is present in forest and shrubland riparian area and wetland ecosystem types.</p> <p>2.4.5 Riparian area and wetland ecosystems are resilient to change from disturbances (including floods, fire, and drought) and offer resistance and resilience to changes in climate.</p> <p>2.4.6 Riparian area and wetland ecosystems have flow regimes and flooding processes that contribute to stream-channel and floodplain development, maintenance, and function, and facilitate the regeneration of native hydrophytic plants (including narrowleaf cottonwood and Rio Grande cottonwood) that depend on flooding for regeneration.</p> <p>2.4.8 Riparian area and wetland ecosystems that contain plant communities with G1, G2, S1, or S2 NatureServe Plant Community conservation status ranks are protected, have habitat to expand into, and have the water quantity and hydrologic systems necessary in order to support and sustain these communities.</p>	<p>2.4.13 Within 10 years, restore the ecological integrity of two deciduous riparian shrubland sites on TRFO lands currently classified as riparian herbaceous lands by increasing the canopy cover of native hydrophytic shrubs by at least 10%.</p> <p>2.4.14 Within 10 years, determine the functional condition of 25 miles on TRFO of riparian area and wetland ecosystems using the Proper Functioning Condition assessment method (Prichard 1998).</p> <p>2.4.16 Within 5 years, eradicate tamarisk and Russian olive on two stream reaches or two seeps/springs on TRFO lands, and conduct follow-up treatment if needed to prevent the establishment or spread of other invasive species.</p> <p>2.4.17 Maintain native riparian and upland ecosystems that have been treated to control non-native species on a minimum of 50 miles of TRFO stream reaches over the next 20 years.</p>	Site, project	Miles monitored, proper function of ecosystems	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/Indicators	Sources and/or Partners
		<p>2.4.9 Soil productivity is intact on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.10 Long-term levels of soil organic matter and soil nutrients are maintained at acceptable levels on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.11 Ground cover (vegetation and litter) is adequate to protect soils and prevent erosion on all riparian area and wetland ecosystems in the TRFO.</p> <p>2.4.12 Long term impacts to soils (e.g., erosion, compaction, displacement, puddling, and/or severe burning) from management actions are rare on all riparian area and wetland ecosystems in the TRFO.</p>				

Table 4.2.4: Aquatic Ecosystems and Fisheries

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/Indicators	Sources and/or Partners
Inventory Lakes/Wetland Areas (BU)	Annual	<p>2.5.2 Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities.</p> <p>2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.</p> <p>2.5.7 Macroinvertebrate diversity and abundance reflect high water quality.</p> <p>2.5.10 All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.</p>		Planning area	Acres inventoried	BLM, USFS, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Inventory Streams/Riparian Areas (BV)	Annual	<p>2.5.2 Streams, lakes, riparian vegetation, and adjacent uplands provide habitats adequate to maintain healthy aquatic ecosystems capable of supporting a variety of native and desired non-native aquatic communities.</p> <p>2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.</p> <p>2.5.4 Channel characteristics, water quality, flow regimens, and physical habitat features are diverse and appropriately reflect the climate, geology, and natural biota of the area.</p> <p>2.5.7 Macroinvertebrate diversity and abundance reflect high water quality.</p> <p>2.5.10 All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.</p>				
Apply Stream/Riparian Treatments (JG) Construct Lake/Wetland/Stream/Riparian Projects	Annual		2.5.15 Annually enhance or restore at least 1 mile of stream habitat to maintain or restore the structure, composition, and function of physical habitat for BLM sensitive species.	Planning area	Miles restored	BLM, CPW

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Implement Threatened and Endangered Species Recovery Actions (JP)	By project	<p>2.5.10 All native and desired non-native fish species are disease-free and thrive in the vast majority of systems historically capable of supporting such species.</p> <p>2.5.11 Abundant Colorado River cutthroat trout populations are maintained and other areas are managed for increased abundance.</p> <p>2.5.12 Threats to Colorado River cutthroat trout and its habitat are eliminated or reduced to the greatest extent possible.</p> <p>2.5.13 The distribution of Colorado River cutthroat trout is increased where ecologically, sociologically, and economically feasible.</p>	<p>2.5.17 Over the life of the LRMP, establish one new population of Colorado River cutthroat trout in each Geographic Management Unit within the historical range. (Colorado River Cutthroat Trout Task Force 2001, or as amended.)</p>	Planning area	Miles restored	BLM, CPW
Implement Conservation Actions for Non-ESA Species and Communities (KE)	By project	<p>2.5.3 The quantity and quality of aquatic habitats are maintained or enhanced to provide for the long-term sustainability of biological diversity and population viability of all native and/or desired non-native vertebrate species.</p>	<p>2.5.15 Annually, enhance or restore at least 1 mile of stream habitat on BLM lands to maintain or restore the structure, composition, and function of physical habitat for BLM Sensitive Species.</p> <p>2.5.16 Over the life of the LRMP, connect at least 2 miles of fragmented stream habitat on BLM lands to provide for aquatic species movement.</p>	Planning area	Miles restored	BLM, CPW

Table 4.2.5: Water Resources

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Water Resources (MU)	Annual to every 5 years	<p>2.6.1 State water quality standards and anti-degradation rules are met and state-classified water uses are supported for all water bodies.</p> <p>2.6.2 Water quality for impaired water bodies on the State of Colorado’s 303(d) list move toward fully supporting state-classified uses.</p> <p>2.6.3 State “Outstanding Waters” within the planning area maintain the high levels of water quality necessary for this status.</p> <p>2.6.5 Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities.</p> <p>2.6.10 Potentially usable aquifers and water-bearing intervals possessing groundwater of quality and/or quantity that could provide multiple-use benefits and maintain water quality at natural conditions.</p>	<p>2.6.17 All approved water developments that involve the use of TRFO lands are permitted pursuant to applicable federal authorizations.</p> <p>2.6.18 Work with the selenium task force annually to reduce salt delivery to the Upper Colorado River Basin.</p> <p>2.6.19 Every 5 years, rehabilitate 10 or more acres to reduce erosion and sedimentation delivery to water bodies on BLM lands.</p>	Site, project	Meet water quality standards. Reduce saline contributions to upper Colorado River.	CHPHE, EPA
Monitor BMP Water Resources through Implementation and Effectiveness (MU)	Annual	<p>2.6.2 Water quality for impaired water bodies on the State’s 303(d) list move toward fully supporting state-classified uses.</p> <p>2.6.3 State “Outstanding Waters” within the planning area maintain the high levels of water quality necessary for this status.</p> <p>2.6.4 Watersheds within the planning area containing saline soils exhibit stable upland, riparian, and channel conditions that produce water quality as close as possible to reference conditions and the lowest possible saline contributions to the Upper Colorado River (per the Colorado River Basin Salinity Control Act for the BLM) (see Appendix I for saline watersheds).</p> <p>2.6.5 Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities.</p>	<p>2.6.20 Over the implementation life of the LRMP, actively participate in the development of all Total Maximum Daily Load determinations and/or other appropriate options for the restoration of State 303(d)-listed impaired water bodies on BLM lands within the planning area.</p>	Project	Meet water quality standards. BMPs implemented and effective.	Oil/gas/mineral company or operator

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
<p>Monitor Stream Riparian Habitat (MO)</p> <p>Monitor Lake/Wetland Habitat (MN)</p>	<p>Annual to every 5 years</p>	<p>2.6.5 Water from TRFO lands will meet applicable drinking water standards when given adequate and appropriate treatment. Management activities throughout the planning area protect and/or enhance the water quality of municipal supply watersheds. Enhancement may be achieved by watershed restoration or by other activities.</p> <p>2.6.6 Stream channel types that naturally build floodplains are connected to their floodplains and riparian areas, maintain the ability to transport overbank flows (which occur on an average of every 1.5 years), and are capable of transporting moderate or high flow events.</p> <p>2.6.7 Physical channel characteristics are in dynamic equilibrium and commensurate with the natural ranges of discharge and sediment load provided to a stream. Streams have the most probable form and expected native riparian vegetation composition within the valley landforms that they occupy and function correctly without management intervention.</p> <p>2.6.8 Historically disturbed and degraded stream channels recover through floodplain development, the establishment of riparian vegetation with correct structure, composition, and function, and exhibit stable channel geomorphic characteristics.</p> <p>2.6.12 Upland areas function properly and do not contribute to stream-channel degradation.</p> <p>2.6.13 The majority of undeveloped and unregulated or free-flowing streams within the planning area are retained in their current undeveloped condition and provide potential reference conditions and offer unique opportunities for aquatic habitat, recreation, species conservation, and pleasing aesthetics.</p>	<p>2.6.17 All approved water developments that involve the use of SJNF and TRFO lands are permitted pursuant to applicable federal authorizations.</p> <p>2.6.18 Work with the selenium task force to reduce salt delivery to the Upper Colorado River Basin.</p> <p>2.6.23 Routes will be decommissioned on TRFO lands as identified through the travel management planning process. Watersheds listed in Appendix I could be considered a priority for decommissioning efforts.</p>	<p>Site, project</p>	<p>Reduce saline contributions to upper Colorado River. Acres rehabilitated or restored in saline watersheds. Acres treated for dust abatement.</p>	<p>CPW, Trout Unlimited</p>

Table 4.2.5: Rangeland Management and Livestock Grazing

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Issue Grazing Permits/Leases (EE)	Annually	<p>2.7.1 Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact.</p> <p>2.7.2 Rangelands and permitted livestock grazing use contribute to the maintenance of large open spaces on private lands.</p>		Planning area	Number of grazing permits renewed/acres public lands under term grazing permit	
Monitor Grazing Allotments (ML)	Annually	<p>2.7.4 Rangelands provide healthy and sustainable habitat for wildlife populations that, in turn, support recreational hunting, fishing, and/or viewing (thereby contributing to the local and regional economy).</p> <p>2.7.5 Rangelands provide diverse, healthy and sustainable plant communities and conserve soil quality.</p>		Planning area/project	Allotments monitored	Grazing permittees
Evaluate Land Health (MJ)	Annually	<p>2.7.5 Rangelands provide diverse, healthy, and sustainable plant communities and conserve soil quality.</p>		Project area	Number of land health assessments completed	Grazing permittees
Inspect Allotments for Grazing Authorization Compliance (NA)	Annually	<p>2.7.1 Rangeland provides forage for qualified local livestock operations and helps ranches remain sustainable and intact.</p> <p>2.7.4 Rangelands provide healthy and sustainable habitat for wildlife populations that, in turn, support recreational hunting, fishing, and/or viewing (thereby contributing to the local and regional economy).</p> <p>2.7.5 Rangelands provide diverse, healthy and sustainable plant communities and conserve soil quality.</p>	<p>2.7.9 Annually administer at least 25% of active grazing allotments to standard on a priority basis, ensuring that all active grazing allotments during the life of the plan receive appropriate administration. Work with grazing permittees and peers to resolve livestock grazing management issues. Take appropriate administrative action as needed to improve livestock grazing management.</p>	Project	Allotments inspected	Grazing permittees

Table 4.2.6: Invasive Species

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory for Presence of Invasive and/or Noxious Weeds (BS)	5 years	<p>2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area, and are not influencing native populations or ecosystem function.</p> <p>2.8.4 Invasive species are not introduced or spread within protected areas.</p> <p>2.8.9 Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, from BLM lands.</p>	<p>2.8.6 Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan.</p>	Project to planning area (varies)	Acres inventoried	Cooperators and contractors
Apply Weed Treatments (JD)	5 years	<p>2.8.2 Federal lands have a transportation system composed of specific roads and trails that do not contribute to the spread of invasive species along travel corridors.</p> <p>2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area and are not influencing native populations or ecosystem function.</p> <p>2.8.4 Invasive species are not introduced or spread within protected areas.</p>	<p>2.8.6 Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan.</p> <p>2.8.7 Within 15 years, increase annual treatment of noxious weeds on TRFO lands to 10% of known infested acres.</p> <p>2.8.8 Within 15 years, annual backcountry treatment (including wilderness areas and WSAs) is 10% to 15% of the total annual noxious weed treatment target for TRFO lands.</p> <p>2.8.9 Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, on TRFO lands.</p>	Project to planning area (varies)	Acres treated	Cooperators and contractors

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Evaluate Weed Treatments (MK)	5 years	<p>2.8.3 Invasive species, both terrestrial and aquatic, are absent or rare within the planning area and are not influencing native populations or ecosystem function.</p> <p>2.8.5 Management activities do not contribute to the spread of invasive annual plants or other invasive species.</p>	<p>2.8.6 Within 15 years, contain priority Class B invasive species on TRFO lands identified in the Invasive Species Action Plan.</p> <p>2.8.9 Over the life of the LRMP, eradicate newly established invasive species, especially Colorado Class A noxious species, on TRFO lands.</p>	Project to planning area (varies)	Acres monitored	Cooperators and contractors

Table 4.2.7: Wildland Fire and Fuels

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Implement Fuels Treatments by prescribed fire Within the WUI (JW), Reduce Fuels Mechanically within WUI (JT), Reduce Hazardous Fuels by other means within WUI (JU)	Annually	<p>2.11.2 Wildfire behavior in the WUI (in and around developed areas and communities) does not result in damage to property and protects public safety.</p> <p>2.11.4 Use of wildland fire and fuels reduction treatments creates vegetation conditions that reduce the threat to real property and infrastructure from wildfire.</p> <p>2.11.5 The WUI will have defensible space and dispersed patterns of fuel conditions that favorably modify wildfire behavior and reduce the rate of wildfire spread in and around at-risk communities.</p>	2.11.10 Annually for the next 10 years, reduce hazardous fuels on an average of 1,000 acres of TRFO lands in the WUI.	TRFO	Acres treated	NFPORS

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Implement Fuels Treatments Outside WUI Using Prescribed fire (JM), Implement Fuels Treatment Mechanically outside of WUI (JQ), Implement Fuels Treatment by other means outside of WUI (JR), Implement Fuels Treatments by prescribed fire Within the WUI (JW), Reduce Fuels Mechanically within WUI (JT), Reduce Hazardous Fuels by other means within WUI (JU)	Annually	<p>2.11.6 Major vegetation types reflect little or no departure from historic range of variation of fire frequency and intensity (e.g., reflect FRCC 1).</p> <p>2.11.7 Planned and unplanned fire ignitions are used to increase resiliency and diversity across all forest and rangeland vegetation types.</p> <p>2.11.8 Fire is reintroduced in order to increase the resistance and resiliency of warm-dry mixed conifer and ponderosa pine forest types on the landscape.</p> <p>2.11.9 The occurrence of low elevation fires burning upward into spruce-fir forest will increase over time to promote the heterogeneity of spruce-fir forests.</p>	<p>2.11.11 Annually for the next 10 years, complete an average of 1,000 acres of fuels reduction and resource enhancement on TRFO lands, utilizing fire managed for resource benefit.</p>	TRFO	Acres treated	NFPORS

Table 4.2.8: Air Quality

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Monitor Air Quality and Climatic Conditions (MI)	Annual	<p>2.12.2 Air quality for Class II Areas within the planning area are maintained or improved with respect to pollutant concentrations so that human health and the integrity of associated aquatic and terrestrial ecosystem components are protected.</p> <p>2.12.3 Activities conducted in the TRFO support natural air quality conditions at nearby Class I areas outside the planning area (such as Mesa Verde National Park).</p> <p>2.12.4 Visibility at designated scenic vistas in Class II areas is maintained or improved within the planning area (see desired conditions in Section 2.15).</p> <p>2.12.6 Management activities in the TRFO control dust in order to minimize impacts of dust-on-snow events.</p>	<p>2.12.9 Over the implementation-life of the LRMP, prevent or reduce the atmospheric deposition of nitrogen and sulfur on TRFO lands and allow no more than a 10% change from the established baseline for lakes with an acid neutralizing capacity (ANC) ≥ 25 microequivalents per liter ($\mu\text{eq/L}$) and no more than 1 $\mu\text{eq/L}$ decrease in ANC for lakes with an ANC < 25 $\mu\text{eq/L}$.</p>	TRFO	Meet air quality standards, reduce atmospheric deposition of pollutants, reduce particulate pollution (dust)	CDPHE, EPA, USFS, National Park Service, oil and gas companies/operators

Table 4.2.9: Access and Travel Management

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inventory Linear Recreation Resources (BY), Trail Annual Maintenance (ID), Trail Deferred Maintenance (IE), Monitor Linear Recreation Objectives (MV), Road Condition Assessment (GU), Trail Condition Assessment (GY), Bridge Condition Assessment (GX)	Annual	<p>2.13.1 The transportation system for TRFO lands within the planning area consists of roads, high-clearance and primitive roads, trails, and bridges that are fiscally sustainable and safe as appropriate for the designated use or desired user experience. The system allows for the use of and enjoyment by the public and meets resource management objectives. Sufficient condition surveys and inspections are conducted to promote road safety and prioritize road maintenance expenditures.</p> <p>2.13.2 The TRFO transportation system provides reasonable and legal access for resource management and recreation and is dynamic and adaptable to resource and user needs.</p> <p>2.13.5 The road and trail system in the planning area has adequate destination signage, mapping, and route markers to assist transportation system users in navigating throughout the TRFO.</p> <p>2.13.11 Motorized and non-motorized users, as well as local, state, tribal, and other federal agencies, are actively engaged in travel management planning, route designation and implementation, and route monitoring for TRFO lands.</p>	<p>2.13.18 Develop maintenance, monitoring, signing, and implementation plans for TRFO routes during the comprehensive travel management planning process, utilizing guidance provided in BLM H-8342, Travel and Transportation Handbook (2012). Designated routes will be assigned maintenance intensities at that time. Objectives by maintenance intensity level are described in Appendix A of BLM Roads Manual 9113 (2011).</p> <p>2.13.26 Maintenance intensities derived from the Roads and Trails Terminology Report (2006) should be used to guide maintenance activities on TRFO lands.</p>	TRFO planning area	Maintain a safe, fiscally sustainable transportation system	BLM road and trail inventory database, BLM staff report, partners inventory and report

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Travel management plans completed (DA), Provide outreach through interpretation and environmental education (AL), Decommission and rehabilitate roads and trails (JX)	10 years	<p>2.13.7 Motorized use on TRFO lands occurs only on designated roads and trails and in small designated open areas (except as exempted by 36 CFR 212.51 and 43 CFR 8340). No new unauthorized or user-created routes are developed on TRFO lands. Any addition of new designated routes to the transportation system will be analyzed using the appropriate planning process and level of environmental analysis.</p> <p>2.13.8 Roads and trails identified for closure within the TRFO are decommissioned and reestablished with native vegetation cover.</p> <p>2.13.10 Travel management plans are complete for all TRFO lands within 5 years of adopting this LRMP. Travel management planning remains a continuous process designed to improve the transportation system on TRFO lands.</p> <p>2.13.12 Transportation system components on TRFO lands are designed, constructed, and maintained to avoid encroaching onto streams and/or riparian areas and wetland ecosystems in ways that impact channel fluctuation or channel geometry (the relationships between channel discharge and channel cross-sectional factors, such as area, width, and depth). Sediment delivery from the transportation system does not measurably impact pool frequency, pool habitat, and/or spawning habitats.</p>	<p>2.13.19 Develop travel management plans for TRFO lands in accordance with the designation criteria in 43 CFR 8342.1. Routes not included in the designated motorized transportation system will be evaluated for their resource impact potential. Those with high potential for resource impacts will be prioritized for decommissioning as part of the implementation plan for each travel management plan decision. Each implementation plan will identify those routes prioritized for decommissioning, the method(s) that may be used, and a schedule for completion.</p>	TRFO planning area	The transportation system is managed to minimize impacts to resources by limiting motorized travel (excluding oversnow travel) to designated routes and decommissioning undesigned roads and trails	BLM road and trail inventory database, TRFO visitor map

Table 4.2.10: Heritage and Cultural Resources

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Historic Structures Protected, Stabilized, or Restored (KO)	5–10 years	<p>2.16.1 Significant heritage and cultural resources, such as sites on the NRHP, are maintained in good to excellent physical condition. Significant cultural values are protected or preserved. Sites are preserved and stabilized, may have site-specific management plans, and may be available for interpretation and research. Sites are protected from physical damage and excessive wear and tear resulting from visitor use.</p> <p>2.16.8 Select historic cabins are restored and adaptively reused for appropriate recreation and/or for interpretive use.</p> <p>3.24.5 In the Silverton area, high-priority historic resources are stabilized and preserved for future generations.</p>	<p>2.16.13 Over the implementation life of the LRMP, protect/preserve/stabilize at least seven significant heritage/cultural resources with identified deferred maintenance needs that, if not addressed, would result in loss of the resource.</p>	Specific sites-throughout TRFO and the Alpine Loop/Silverton Area	Sites protected, stabilized, or restored	State Historic Preservation Office, Tribes, volunteers, schools, State Historical Fund, grants
Heritage Resources Education and Outreach (AE)	Annual	<p>2.16.6 Management presence at key heritage and cultural resource sites is provided to protect sensitive or heavily visited sites from inappropriate use or vandalism.</p> <p>2.16.10 Looting of sites is reduced through increased public awareness and education related to cultural resources. Vandalism at sites is promptly remedied to prevent recurrence.</p>	<p>2.16.14 Annually, post protective signage and/or surveillance cameras on at least one heritage and cultural resource site at risk for vandalism.</p>	Specific sites	Educational outreach programs; protective signs/fencing	BLM, San Juan Mountains Association

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Heritage Resources Education and Outreach (AE)	10–15 years	<p>2.16.7 Interpretive displays, visitor contacts, and/or brochures are available in order to help visitors and employees understand and appreciate the heritage and cultural resources associated with the planning area. A wide range of heritage activities, experiences, and products (both on- and off-site) are available for visitor enjoyment and education. Off-site activities include museum displays, brochures, audio programs, classroom presentations, and field trips. Public access and interpretive efforts are compatible with the physical, cultural, and recreational settings and values of the resources.</p> <p>3.24.1 Interpretation of the historic landscapes and features of the Silverton SRMA is made available through a range of effective and appropriate venues. Information is designed to enhance the touring experience and encourage the greatest extent of appreciation and protection of these precious assets.</p>	2.16.18 Over the life of the LRMP, develop at least one interpretive product in partnership with the Old Spanish Trail Association that interprets the Old Spanish National Historic Trail within the planning area.	Specific sites throughout TRFO and the Alpine Loop and Old Spanish Trail Silverton Area	Educational outreach programs; Interpretation developed	TRFO, Old Spanish Trail Association, grants; San Juan County Historical Society
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) Medium Priority	10–15 years	2.16.9 Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.	2.16.17 Over the life of the LRMP, partner with the Old Spanish Trail Association to ground-truth the location of at least two segments of the Old Spanish National Historic Trail.	Specific sites-Old Spanish Trail	Sites documented	TRFO, Old Spanish Trail Association, grants
Heritage Resources Education and Outreach (AE)	3–5 years	<p>3.14.1 The Anasazi Culture Area ACEC offers appropriate recreation and interpretive opportunities while archeological resources are preserved.</p> <p>3.14.5 The relevance and importance values of this ACEC, as described in Appendix U, are maintained.</p> <p>3.14.7 Recreational activities are actively managed in the designated areas, while protecting and mitigating impacts to cultural resources.</p>	3.14.10 Within 5 years, develop procedures to encourage, foster, and conduct high-quality scientific and scholarly research.	The Anasazi Culture Area ACEC	Educational outreach programs; Interpretation developed	TRFO, San Juan Mountains Association

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Heritage Resources Stabilized, Managed and Protected (HF) Heritage Resources Monitored (MY) High Priority	Monitor annually, 5 years to avoid sites	3.14.2 The existing character of the cultural and physical landscape is preserved. 3.14.4 Vegetation is managed to protect and enhance cultural resources.	3.14.8 Over the life of the LRMP, implement site steward and “adopt-a-site” programs. 3.14.9 Within 7 years, reroute or eliminate unauthorized and designated trails to avoid impacts to archeological sites.	The Anasazi Culture Area ACEC	Sites protected and sites monitored	TRFO, San Juan Mountains Association, Southwest Conservation Corps
Heritage Resources Monitored (MY) High Priority	5 years	3.15.5 The existing character of the cultural and physical landscape is preserved.	3.15.9 Over the life of the LRMP, conduct phased cultural resources inventory of the area.	Mesa Verde Escarpment	Sites monitored	TRFO, colleges, universities
Acres of Heritage Resource Inventories (BC) High Priority	10 years	3.15.2 User-made trails and other routes are rerouted or eliminated in order to avoid impacts to archeological sites.	3.15.10 Over the next 3 years, develop procedures to encourage, foster, and conduct high-quality scientific and scholarly research.	Mesa Verde Escarpment	Acres inventoried	TRFO, colleges, universities, Crow Canyon Archaeological Center, State Historic Preservation Office, grants
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) High Priority	10 years	3.15.5 The existing character of the cultural and physical landscape is preserved. 3.15.6 Traditional cultural heritage values associated with cultural resources and landscapes within the ACEC are considered and protected. 3.15.7 Designated routes are limited to maintain the integrity of cultural resource values and for scientific research access. 3.15.8 Opportunities are sought to acquire adjacent lands and/or easements to improve access and protection of cultural resources.	3.15.3 Hazardous fuels are managed in order to protect and preserve archaeological resources, and to reduce the risk of wildfire to adjacent private lands.	Mesa Verde Escarpment	Sites documented	TRFO

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures /Indicators	Sources and/or Partners
Acres of Heritage Resource Inventories (BC), Heritage Resources Intensively Recorded, Evaluated and Studied (FD), Heritage Resources Education and Outreach (AE) Medium Priority	10–15 years	3.11.6 Partnerships are encouraged and expanded in order to provide identification, documentation, monitoring, protection, preservation, education, research, and interpretation.	2.16.19 Over the life of the LRMP, inventory high potential historic sites and trail routes along the Old Spanish Trail, develop a national trail management corridor, and establish goals and objectives for national trails in accordance with BLM Manuals 6250 (2012) and 6280 (2012).	Specific sites-Old Spanish Trail	Educational outreach programs; Interpretation developed; Acres inventoried; Sites documented	TRFO, Old Spanish Trail Association, grants

Table 4.2.11: Paleontology

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Acres of Heritage Resource Inventories (BC)	Annually	Ensure that paleontological resources are considered during the planning process using scientific principles and expertise in accordance with Paleontological Resources Preservation Act of 2009.	2.17.10 Where feasible, conduct fossil resource inventories in areas where they are needed on a project basis over the life of the plan.	Planning area	Acres inventoried	TRFO, colleges, universities
Heritage Resources Intensively Recorded, Evaluated and Studied (FD) Medium Priority	10–15 years	2.17.1 Acquiring better knowledge of paleontological resources on TRFO lands is emphasized.	2.17.5 Over the life of the LRMP, identify and document up to five paleontological sites on TRFO lands.	Site-specific	Sites documented	TRFO, colleges, universities
Heritage Resources Monitored (MY) Medium Priority	Annual	2.17.3 Known dinosaur localities are actively managed for the relevance and importance of Jurassic fossils.	2.17.6 At a minimum, monitor two paleontological localities per year.	Site-specific and Horse Range Mesa	Sites monitored	TRFO, colleges, universities

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Heritage Resources Education and Outreach (AE)	10–15 years	2.17.2 Paleontological resources are available for appropriate scientific, educational, and recreational uses by present and future generations.	2.17.8 Increase opportunities for outdoor recreational experiences and volunteer projects focused on fossil resource management, and increase the number of partnerships with educational and research institutions.	Planning area	Public outreach	TRFO, colleges, universities

Table 4.2.12: Minerals and Energy

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Inspect and Verify Production at Mineral Material Sites (NF)	Monthly to Annual – size dependent	2.19.2 Mineral materials (including gravel and decorative stone) are available to support resource management needs, personal and hobby use, and commercial pursuits. Aggregate materials in the Ewing Mesa and Grandview area will continue to be developed as needed. 2.19.4 Reclamation of mineral exploration, development, and production activities is stable, long term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	2.19.8 Process requests for mineral materials in a timely manner consistent with LRMP direction and applicable laws. Identify areas suitable for, and establish common use area(s) and/or community pits to provide sources of mineral materials to the public.	Site	Production	
Inspect Locatable Mineral Sites for Surface Mgt (NI)	Monthly to Annual	2.19.5 Reclamation of mineral exploration, development, and production activities is stable, long-term, and implemented as soon as is reasonably possible in order to minimize impacts to other resources.	None	Site	Sites	

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Conduct Fluid Mineral Inspections, Including Production and Environmental	As required	<p>Potential social and resource impacts from the development of the Paradox Basin play area are minimized by phasing oil and gas leasing to achieve orderly economic development of portions of the play zones at any given time.</p> <p>2.19.5 All oil and gas well fields starting at the field development stage and all other established well fields where practicable maximize the collocation of facilities to minimize construction footprints and reduce tailpipe emissions.</p>		Sites	Sites/wells ancillary facilities	

Table 4.2.13: Abandoned Mine Lands

Program Element	Frequency of Reporting	Desired Condition	Objectives	Scale	Performance Measures/ Indicators	Sources and/or Partners
Integrity and Effectiveness of Installed AML Facilities (JK,HP)	Annual	2.21.3 Mine waste repositories are protected and physical safety closures are protected or replaced during any BLM-authorized action.		Project	Sites	Colorado Division of Reclamation Mining and Safety, TRFO
Stream Water Quality in AML Impacted Watersheds (JK)	Annual	2.21.1 Abandoned mine reclamation within the planning area does not negatively impact water quality or historic resource protection.	2.21.6 The AML program coordinates with affected parties, partners, and stakeholder groups on AML projects.	Watershed	Samples	EPA, Animas River Stakeholders Group and other watershed groups, Riverwatch