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Biennial Monitoring Evaluation Report for the Santa Fe National Forest

August 29, 2022 – September 30, 2023



Cover photo: A photograph of Teakettle Rock in the Coyote Ranger District at Jemez Springs, New Mexico taken July 12, 2024.
Photo credit: USDA/Forest Service by Patty Coffman

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Why Monitoring Matters

There is no single correct approach to managing a forest or grassland. Each decision maker must weigh the ecological complexity of the ecosystems, the social and economic contributions, the changing environmental conditions, the many different viewpoints of the public, and uncertainty about long-term consequences.

Data from monitoring can therefore be extremely useful. A robust, transparent, and meaningful monitoring program can provide information on specific resources, management impacts, and overall trends in condition – in other words, feedback on whether we are meeting our management objectives.

Every national forest or grassland has a land management plan that balances tradeoffs among recreation, timber, water, wilderness, wildlife habitat, and other uses. The plan describes a set of desired conditions – a science-based vision for the state of the forest or grassland once the goals of the plan are met. The land management plan includes a monitoring plan, organized around a set of monitoring questions and indicators that are designed to track progress toward achieving the desired conditions. Monitoring of certain resources is required by law, regulation, or policy (see box below for required monitoring topics). Other monitoring occurs depending on specific needs of the national forest or grassland. Under the current planning rule, monitoring questions developed for the monitoring plan must be “within the financial and technical capability” of the Forest Service, meaning that we must have the money and ability, including support from partners, to actually carry out the strategic monitoring outlined in the monitoring plan.

Every two years, each forest or grassland compiles and evaluates monitoring results and drafts a biennial monitoring evaluation report (BMER) like this one. If the monitoring report reveals that we are not quite meeting the mark, then there might be a need to change the land management plan, the management activities, the monitoring plan, or to reassess current conditions and trends—this is adaptively managing. Monitoring results allow us to learn through management and adjust our strategies based on what we learned. Monitoring also helps us be accountable and transparent to interested and affected parties and colleagues. BMERs are critical to adaptive management because they tell us and the public whether the land management plan is working. Although we don’t make any decisions in BMERs, they are a great opportunity to document and share monitoring results.

Our land management plan is available on our website https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1046331.pdf. The monitoring plan, Chapter 5, begins on page 239.

Monitoring questions must address the following topics (per 36 CFR sec 219.12 - Monitoring and Forest Service Manual 1909.12 sec. 32.13 - Content of the Plan Monitoring Program):

1. Status of select watershed conditions.
2. Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. Status of focal species to assess the ecological conditions.
4. Status of a select set of the ecological conditions to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. Status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that might be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. Effects of each management system to determine that they do not substantially and permanently impair the productivity of the land.
9. Social, economic, and cultural sustainability must also be addressed in the monitoring plan because sustainability is an inherent part of several of the required monitoring items.

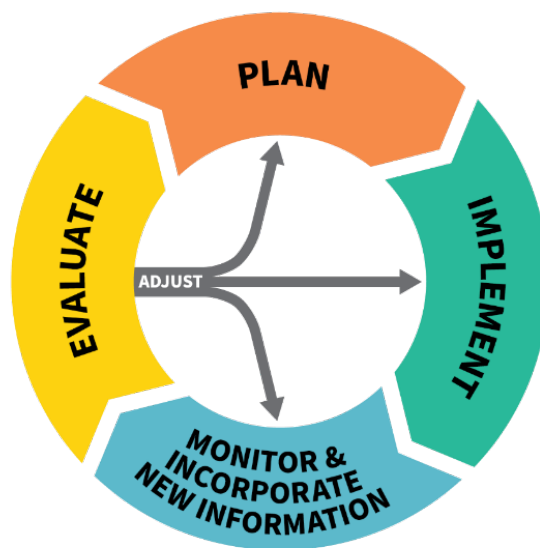


Figure 1. Adaptive Management Cycle

Partnerships and Data Sources

To accomplish our mission, the Forest Service partners with land management agencies across all levels of government, with nonprofit and for-profit entities, universities, and communities large and small. The diversity of our partners parallels the breadth of Forest Service work that includes: managing the nation's 193 million acres of National Forest System lands to sustain healthy terrestrial and aquatic ecosystems; conducting collaborative research that connects the agency to hundreds of partners around the world; supporting States, Tribes, communities, and nonindustrial private landowners through technical and financial assistance; protecting communities and the global environment from catastrophic wildland fires, climate change and invasive species; and inspiring life-long connections to nature for every American.

Monitoring can be expensive, time-consuming, and labor-intensive, so we rely on the help of volunteers and our partners and work collaboratively with them to accomplish monitoring objectives. We also rely on existing data sources such as national and regional inventory, monitoring, and research programs; Federal, State, or local government agencies; scientists, partners, and members of the public; and information from Tribal communities and Alaska Native Corporations.

Report Summary

This biennial monitoring evaluation report (BMER) for the Santa Fe National Forest (SFNF) documents monitoring activities that occurred August 29, 2022, through September 30, 2023. Resource specialists answered 17 of the 23 monitoring questions using 54 of the 76 indicators to determine if current activities described in the 2022 Santa Fe National Forest Land Management Plan (Forest Plan) are moving the forest toward or maintaining the desired conditions or objectives.

The detailed resource data and specialist reports that were used to build this monitoring report are maintained at the SFNF Supervisor's Office. This report is a synthesis of the information provided in each specialist report and summarized to display how we are responding to the monitoring topics, and therefore may not match exactly each specialist worksheet individually.

Three questions that were not answered in this monitoring report were because we either did not have the data available or the data was unclear. The remaining three questions that were not answered will be addressed in the next monitoring report because data for these resources are collected on longer monitoring frequencies than this cycle allowed.

Of the 17 monitoring questions examined, we are meeting plan objectives or progressing toward our desired conditions in full on 4 monitoring questions. The remaining 13 monitoring questions have at least some of the indicators that are also either meeting plan objectives or progressing toward our desired conditions, while other indicators are not meeting plan objectives or are moving away from the desired conditions.

This report includes monitoring indicator status summary tables. The tables represent the current condition, level or value of the indicator, and the recent trend. The trend is the trajectory of the data over time. The results contained in the report are too early to draw conclusions and subsequent reports should provide insight on trends. The target can be a limit, threshold, or a range, but usually it is a range. The key for the results column is displayed below. Green is good, yellow is marginal, red needs attention, and grayed out means there is not enough data to determine the current status or trend. The first symbol represents the current status, and the second symbol represents the recent trend.

Table 1. Monitoring Indicator Status Summary Results Key

Result	Description
++	Green is good. Current status is within target; recent trend is towards target.
+-	Yellow is marginal. Current status is within target; recent trend is away from target.
-+	Yellow is marginal. Current status is outside target; recent trend is towards target.
--	Red needs attention. Current status is outside target; recent trend is away from target.
	Grayed out means there is not enough data to determine the current status or trend.

Improved monitoring methods are needed to monitor range, riparian vegetation, wildlife and aquatic species. Several monitoring questions need to be refined to use existing relevant monitoring and data sources, capitalize on existing partnerships, and apply best available science. Additionally, we could develop more meaningful monitoring questions or indicators for assessing recreation on the forest.

The following table tallies our results based on evaluation of the monitoring questions addressed in this report. At a glance, it provides the overall totals for how many monitoring questions are meeting the Forest Plan direction, or whether changes to the Forest Plan, management activities, monitoring plan, or new assessment should be considered to help us move toward the direction outlined in the Forest Plan. See the summary of results and recommendations table at the end of this report for a more detailed summary of the monitoring questions, results, and recommendations.

Table 2. Tallied results for all monitoring questions

	Yes	No	Uncertain
Forest Plan direction met	4	7	6
Change to Forest Plan	0	17	0
Change to management activities	0	17	0
Change to monitoring plan	0	17	0
Assessment	0	17	0

Each new monitoring report builds upon the evaluations and recommendations that precede it; however, this is the first monitoring report since the 2022 Forest Plan has been in effect. This monitoring evaluation report and previous reports are available at

https://www.fs.usda.gov/detail/santafe/landmanagement/planning/?cid=fsbdev7_021064.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred from August 29, 2022, through September 30, 2023, on the Santa Fe National Forest.

I have evaluated the monitoring and evaluation results presented in this report. The monitoring data is limited to only one year's worth of information and therefore it is too soon to draw conclusions resulting in changes to the 2022 Land Management Plan. I therefore consider the 2022 Land Management Plan sufficient to continue to guide land and resource management of the Santa Fe National Forest and plan a deeper examination of the considerations for changes through engagement with resource specialists.

Shaun Sanchez
Forest Supervisor

Status of Select Watershed Conditions

Properly functioning watersheds, commonly referred to as healthy watersheds, are the foundation for sustaining ecosystems and the protection of renewable natural resources, values, and benefits. Watersheds that are functioning properly: provide for high biotic integrity; are resilient and recover rapidly from natural and human disturbances; exhibit a high degree of connectivity along the stream, across the floodplain, and between surface and subsurface flows; provide important ecosystem services such as high water quality, the recharge of streams and aquifers, the maintenance of riparian communities, and the moderation of climate variability and change; and maintain long-term soil productivity.

Plan direction is aimed at supporting watersheds that are functioning properly, resilient to disturbance, support multiple uses, and have high water quality. The quality of water within the SFNF is generally high and is used both in and outside of the forest for many purposes. Most watersheds in the SFNF provide water for human use downstream. Improving the water quality in the SFNF is becoming increasingly important as the demand for clean water resources increases for human use, and the timing and volume of surface runoff responds to climate change.

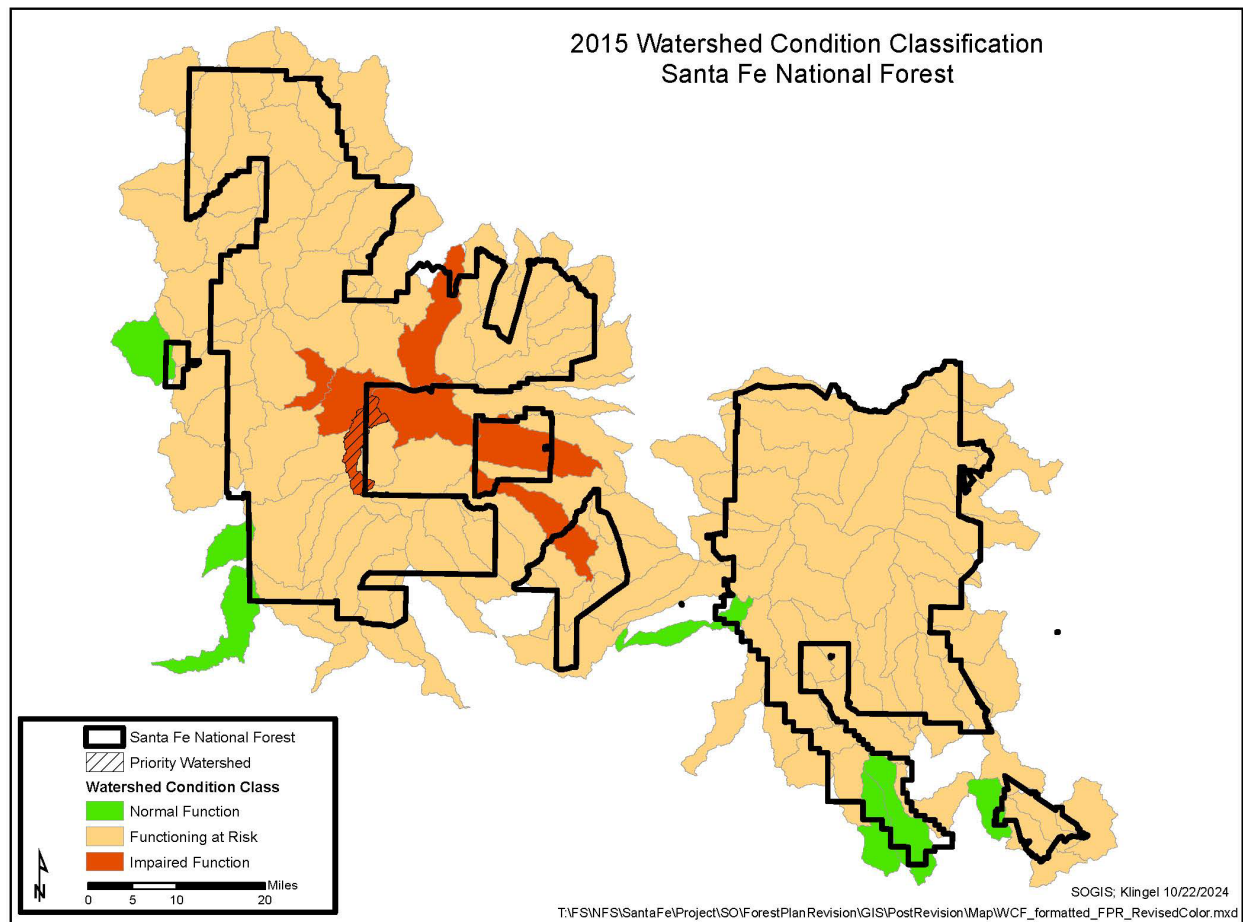


Figure 2. 2015 Watershed Condition Classification, Santa Fe National Forest

The results of the 2015 watershed condition assessment show 6 percent of the forest's sub-watersheds are considered functioning properly, 88 percent are functioning at risk, and 6 percent are considered impaired. Overall, 94 percent of the SFNF sub-watersheds are not properly functioning.

Monitoring Topic (i) Questions and Key Results

MQ 1: Are management activities maintaining or improving watershed function and implementing best management practices to minimize impacts and improve water quality?

Table 3. Monitoring Question 1 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

During the period of evaluation, the SFNF lacked capacity for best management practice monitoring following national protocols, however, the SFNF has since restarted best management practice monitoring efforts that will be reflected in the next monitoring evaluation report. All watersheds across the SFNF are expected to undergo reassessment in 2026 and watersheds impacted by the Hermit's Peak and Calf Canyon fire are currently being reassessed. We implemented projects which benefitted soil and water resources on 8,733 acres. Approximately 170 miles of roads were maintained; however, documentation is insufficient to determine if this maintenance mitigated impacts to the point of restoring hydrologic and ecological function.

Table 4. Monitoring Question 1 Indicator Status Summary

Indicator	Result
Percentage of forest watershed in properly – condition	
Acres treated that improve watershed condition and ecological function	++
Number of fully implemented and fully effective best management practice evaluations vs. unimplemented and ineffective best management practice evaluations	
Miles of decommissioned, improved, or maintained roads	+ –

MQ 2: Are all prescribed and managed wildfires conducted in accordance with state air quality regulations governing prescribed and managed wildfire?

Table 5. Monitoring Question 2 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

Data from two permanent ozone monitor sites located at Coyote Ranger Station and Santa Fe Airport show average annual 8-hour ozone concentrations are below the National Ambient Air Quality Standard.

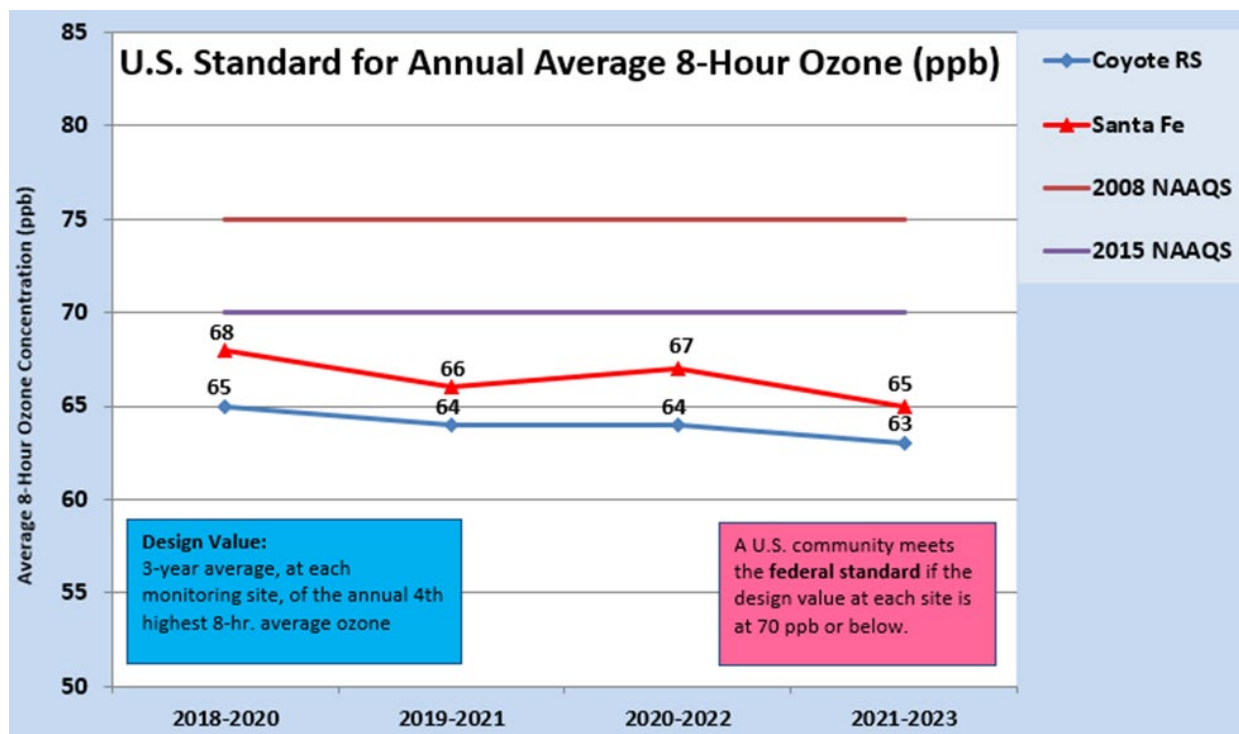


Figure 3. U.S. standard for annual average 8-hour ozone from 2018 through 2023

Status of Select Ecological Conditions

Monitoring a select set of important ecological conditions required by a select set of species at risk, along with monitoring for ecosystems and watershed conditions, provides information about the effectiveness of the ecosystem and species-specific plan components related to the ecological conditions monitored.

The 2022 Forest Plan direction for ecosystems support the return of natural disturbance processes (fire) that maintain or restore appropriate vegetation and structure, thereby improving wildlife habitat and reducing uncharacteristic wildland fire. The Forest Plan emphasizes returning vegetation to reference conditions in frequent fire adapted forested and non-forested types using silvicultural treatments (average 15,000 acres annually) and fire (prescribed and natural, average 32,500 acres annually) to protect life and property, as well as cultural and ecological resources.



Photo 1. Tesuque Creek Trail. Photo credit: USDA Forest Service photo by Gabriel Chavez

Monitoring Topic (ii) Questions and Key Results

MQ 2: Are all prescribed and managed wildfires conducted in accordance with state air quality regulations governing prescribed and managed wildfire?

Table 6. Monitoring Question 2 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes

Recommendation	Response
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

PM_{2.5} data from permanent air quality monitor sites near SFNF show concentrations are currently well below both the annual and 24-hour standards as established by the Environmental Protection Agency. As a result, there have been no exceptional event demonstrations due to wildfire smoke impacts.

Data from two permanent ozone monitor sites located at Coyote Ranger Station and Santa Fe Airport show average annual 8-hour ozone concentrations are also below the National Ambient Air Quality Standard.

Table 7. Monitoring Question 2 Indicator Status Summary

Indicator	Result
PM _{2.5} Concentrations: Remaining Below the 24-Hour and Annual Average standards at the permanent air quality monitor in Santa Fe.	++
Ozone Concentrations: Remaining Below the Standards	++
Visibility	++

MQ 3: (a) Are management actions maintaining or improving soil (ground) cover, contributing to improved soil condition? (b) Are management actions resulting in significant changes to the productivity of the land?

Table 8. Monitoring Question 3 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

Based on the common non-forest vegetation sampling protocol (CNVSP) data, ground cover and plant species composition data for eight sites, soil condition and productivity appear stable. The trend from native forb plant assemblages to non-native grasses may indicate some decline in soil condition, but there is not enough data to provide a level of confidence in characterizing a trend or discussion of whether a trigger is exceeded.

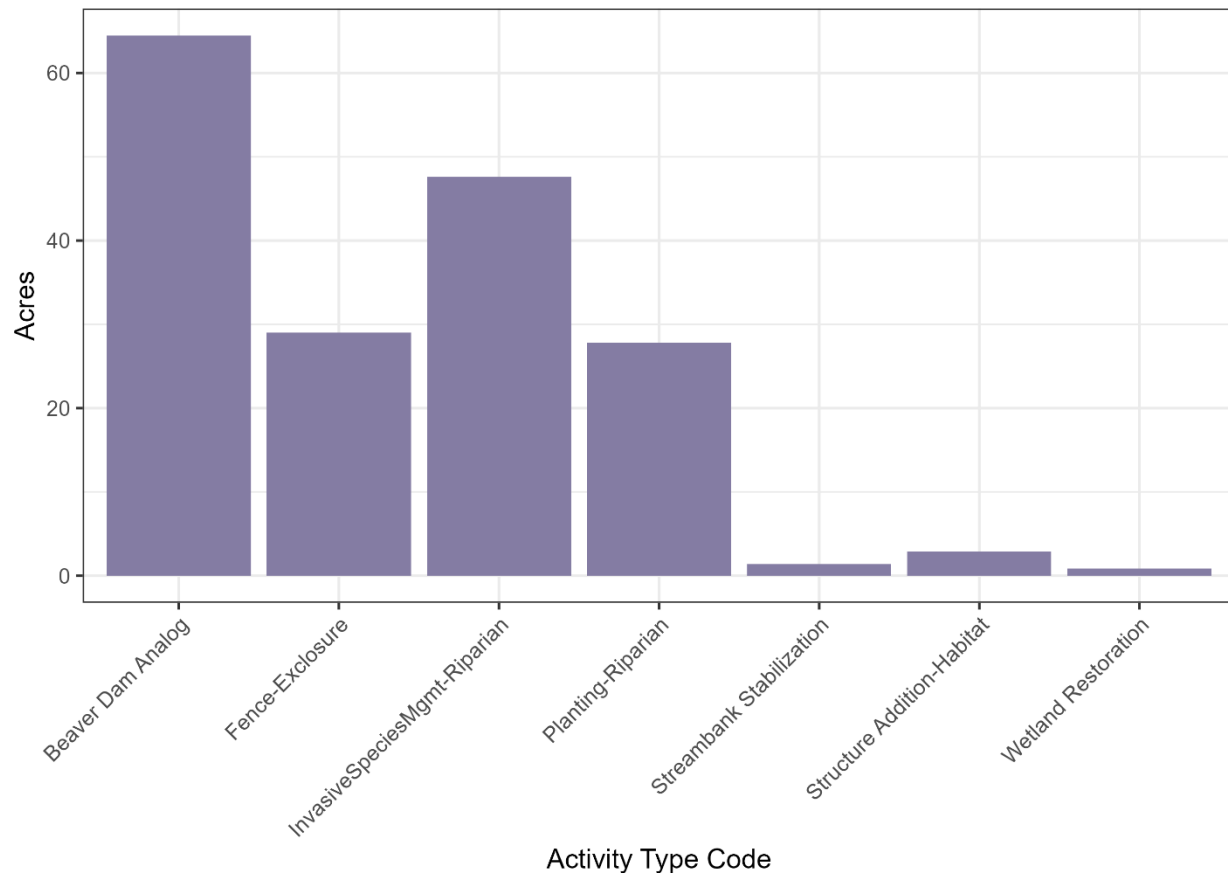
MQ 4: Are management actions maintaining or moving riparian vegetation towards desired conditions?

Table 9. Monitoring Question 4 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

We did not complete a watershed condition framework (WCF) reassessment during the evaluation period. Reassessments are scheduled for 2025/2026. Winward monitoring, while informative of specific sites, lacks sufficient data to draw a forest-wide conclusion of trends for the monitoring question. Several riparian focused soil and watershed activities were completed and displayed below.

Figure 4. Riparian focused soil and watershed acres accomplished during evaluation period by Activity Type Code



MQ 6: Is aquatic habitat distributed, connected, and in a condition capable of supporting native aquatic species?

Table 10. Monitoring Question 6 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

We know invasive aquatic species are becoming more prevalent and resources and focus to address those issues are lacking. However, instream habitat restoration work is moving in a positive direction on the SFNF and those indicators outside targets will need focused on soon to the extent practical. In general, the SFNF is moving in a more positive direction under the new plan and making progress on monitoring indicators.

Table 11. Monitoring Question 6 Indicator Status Summary

Indicator	Result
Miles of aquatic habitat restored	++
Stream temperature	+-
Number of beneficial barriers created, and number of harmful barriers removed	++
Large woody debris	++
Presence of endemic, at-risk, or appropriate indicator species	--
Presence of invasive aquatic species	--

MQ 7: Are management activities moving terrestrial habitat towards desired conditions?**Table 12. Monitoring Question 7 Recommendation Summary**

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

Overall, we are moving towards targets with exception of improving rangelands. The presence of endemic, at-risk species is tracked and implemented project by project.

Common stand exams were collected within every known Protected Activity Center (PAC) for the Mexican spotted owl in 2022. These data were only collected for PACs known in 2021 therefore, some new PACs need to have Common Stand Exam data sampled.

We accomplished terrestrial habitat enhancements; however, range vegetation improvements are below targets. Some dual use (range and wildlife) water improvements were maintained in 2022 and 2023; however, the exact number is not known at this time.

We contracted Mexican spotted owl surveys across both sides of the Forest. Twenty-two PACs were monitored, and 6 inventory routes were accomplished to facilitate implementation of prescribed fires and clearance work associated with large restoration projects.

We also conducted internal PAC and inventory surveys, multiple inventory surveys for the American goshawk (species of conservation concern), deployed track plates for the New Mexico meadow jumping mouse (endangered species) at 7 locations and authored multiple agreements for track plating and small mammal trapping. In addition, we also inventoried Arizona willow (species of conservation concern) with the Institute for Applied Ecology and conducted multiple fish sampling events with New Mexico Department of Game and Fish (NMDGF).

Table 13. Monitoring Question 7 Indicator Status Summary

Indicator	Result
Vegetation species structure, density, and composition	- +
Acres of terrestrial habitat restored or enhanced; range vegetation improved	+-
Number of water features maintained, improved, or installed for wildlife benefit	++

Indicator	Result
Presence of endemic, at-risk or appropriate indicator species	++

MQ 8: Are aquatic and terrestrial habitats connected and do they provide the necessary ecological conditions to allow animals to move freely about the forest?

Table 14. Monitoring Question 8 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

We are moving toward attaining data for this monitoring question. Collaborating with partners, we will develop a digital survey to track beaver activity in the SFNF and utilize citizen science to the extent possible. We are pursuing multiple stream restoration projects and are aiming to entice beaver to recolonize abandoned areas. Improving range management in the SFNF can significantly improve the chances that beaver can reoccupy an area.

Multiple partners are working together in a new Beaver Coalition. This group contains non-profit members, federal and state partners. In the coming years, beaver restoration will scale up and could include translocations and continuance of habitat improvement projects.

MQ 9: Are management practices moving woodland and grassland vegetation systems with plan objectives (JUG, PJG, CPGB, SAGE, and MSG) toward desired conditions and increasing their resilience to future disturbances?

Table 15. Monitoring Question 9 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

Range and grazing monitoring data over the past years has been insufficient to capture precise data. The data shows we are currently well below targets with zero accomplishments under the 2022 Forest Plan and are not on track for meeting desired annual or 10-year goals, however current planning efforts should allow for increased pace and scale for future implementation. Data collection scheduled for 2025 will provide a better data set for the next reporting period.

MQ 10: Are management practices moving ponderosa pine (PPF) and mixed conifer-frequent fire (MCD) forests toward desired conditions and increasing their resilience to future disturbances?

Table 16. Monitoring Question 10 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No

Recommendation	Response
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The only signed decision under the 2022 Forest Plan with active implementation is the Santa Fe Mountains Landscape Resiliency Project signed in May 2023. We have only accomplished one percent of the annual target on mixed conifer frequent fire ecological resource unit, however current planning efforts should allow for increased pace and scale for future implementation that will provide more opportunities to meet the desired 10-year objectives.

Table 17. Monitoring Question 10 Indicator Status Summary

Indicator	Result
Vegetation species structure, density, and composition	- +
Acres of insect and disease infestations	--
Acres of fuel and restoration treatments	- +

MQ 13: What is the status and trend of invasive plant species in the plan area?

Table 18. Monitoring Question 13 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The general trends are in the right direction. We have created best management practices, surveyed for invasives, and contracted for treatment. However, we have seen a rapid increase in invasive species mapped in the SFNF. This could be a result of increased awareness and education. The acres infested in the SFNF are higher than identified in the plan assessment. We have also had a change in condition with the Hermit's Peak and Calf Canyon fire. There has been an exponential increase in the invasive species identified in the SFNF. Survey 123 has been a very efficient tool for collecting invasive data, and our partners are taking full advantage of it.

Table 19. Monitoring Question 13 Indicator Status Summary

Indicator	Result
Acres of invasives treated	--
Acres of invasives inventoried	++

MQ 14: Is wildland fire being used to maintain desired fuel levels and vegetation characteristics, at frequencies and severities consistent with the natural range of variability?

Table 20. Monitoring Question 14 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No

Recommendation	Response
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

There were a number of escaped fires nationally during the implementation period that resulted in a national prescribed fire pause and impacted our ability to implement projects. The SFNF used the pause to establish new more robust prescribed burning protocols and engage more with the public and partners prior to implementing prescribed fire in the forest.

Positive fuels treatment interactions are a good measure that we are meeting objectives. The higher the percentage of positive interactions are a gauge that fuels treatments are strategically located, and fuel loading and vegetation conditions are conducive to reducing fire behavior and the resulting fire severity.

Mechanical treatments to prepare fuel breaks along roads, trails, ridges, and other natural features provides opportunities for fire managers to manage unplanned natural ignitions when conditions allow for maintaining desired fire severities that are within the natural range of variability. These containment features also allow fire managers to safely and efficiently suppress natural or unwanted human caused wildfires when environmental conditions are not conducive to achieving severities that are within the natural range of variability. These types of treatments require using quantitative wildfire risk assessments, large NEPA areas, and coordinating with other resource areas to assure compliance survey is completed.

Table 21. Monitoring Question 14 Indicator Status Summary

Indicator	Result
Number and acres of fires managed for multiple objectives by vegetation community and severity	--
Acres of mixed conifer-frequent fire treated	--
Acres of ponderosa pine forest treated	--
Burn severity mapping following fires (prescribed and natural starts)	++

Status of Focal Species

The purpose for tracking the status of focal species over time is that focal species are indicators of ecological integrity. The monitoring of focal species will provide insight on the ecological integrity of three key ecosystems as well as one key ecological concept. The ecosystems selected are riparian, piñon-juniper forests, and ponderosa pine forests. Riparian and ponderosa pine forests are among the most highly departed ecosystems in the forest; therefore, they are targeted to receive some of the most intensive treatment with high and concrete objectives in the Forest Plan. Piñon-juniper ecosystems are not as degraded; however, they are projected to be one of the most highly impacted systems because of climate change. Given the amount of recreational and cultural use (fuelwood collection) within these systems, it is critical to monitor the condition of these systems to make sure they are still functioning properly with the growing concern from climate change. Maintaining wildlife habitat connectivity is also a key aspect to resiliency, because being able to move throughout and beyond the forest is critical for some species' survival. Focal species selected for monitoring were chosen by a panel of wildlife biologists who used their understanding of wildlife survey techniques as well as the appropriateness of each species to represent a given ecosystem. Personnel consulted included staff from the Forest Service, U.S. Fish and Wildlife Service, New Mexico Department of Game and Fish, and other conservation organizations.



Photo 2. Cordilleran flycatcher. Photo credit: USDA Forest Service photo by Julie Luetzelschwab

The Rio Grande cutthroat trout (*Oncorhynchus clarkii virginalis*) is found in northern New Mexico and southern Colorado in tributaries of the Rio Grande. It is one of 9 subspecies of the Rocky Mountain cutthroat trout native to the western United States. Rio Grande cutthroat trout is the State Fish of New Mexico and is the only cutthroat trout native to the state. The Rio Grande cutthroat trout requires clear, cold, highly oxygenated water, clean gravel substrates, a network of pools and riffles, and an abundance of food (typically aquatic and terrestrial invertebrates). In the SFNF, populations occur in high-elevation cold-water streams. Rio Grande cutthroat trout will serve as an excellent indicator for riparian health.

The northern leopard frog (*Lithobates pipiens*) is an amphibian that the various stages of its life cycle occur both in water and on land. The northern leopard frog is found in small streams, springs, and permanent pools along the entire length of the Rio Grande in northern New Mexico, typically 3,120 to 9,150 feet in elevation. Northern leopard frogs should be considered at-risk due to their limited range and moderate to high risk within their habitats. Northern leopard frogs will serve as an excellent indicator for riparian health.

The plumbeous vireo (*Vireo plumbeus*) is a songbird that can be found in New Mexico, where it inhabits open coniferous woodlands and riparian areas. The vireo appears to favor riparian areas in lower elevations within the SFNF. Plumbeous vireo will serve as an excellent indicator of riparian health below 7,500 feet elevation.

The Cordilleran flycatcher (*Empidonax occidentalis*) is a slim, small songbird found primarily in higher elevation coniferous forest near water, found in New Mexico, where they can be seen from May to September. They nest in shady but partly open coniferous and mixed forests, usually near streams in ravines and canyons of foothills and mountains. Cordilleran flycatcher will serve as an excellent indicator of riparian health above 7,500 feet elevation.

The North American beaver (*Castor canadensis*), New Mexico's largest rodent, are industrious engineers that prefer certain woody species of vegetation for food and construction of their dam lodges, which they use for shelter and food storage. American beavers are present in New Mexico, but their population is considered ecologically absent due to a lack of suitable habitat. Since beavers repopulate areas if habitat is connected and in reference condition, beavers will serve as an excellent indicator for wildlife connectivity.

The Northern goshawk (*Accipiter gentilis*) is a large bird of prey and can be found year-round in New Mexico and most of the western United States. Northern goshawk is a forest habitat generalist that uses a wide variety of forest ages, structural conditions and successional stages. Northern goshawk typically nests in ponderosa pine or mixed conifer forests but are often found feeding in riparian areas; therefore, vegetative conditions trending toward desired conditions in ponderosa pine forest, mixed conifer with frequent fire, and riparian areas will increase or maintain viability for that species. Because northern goshawks require specific structural requirements, they will serve as an excellent indicator for ponderosa pine forest health.

The juniper titmouse (*Baeolophus ridgwayi*) is a non-migratory bird of conservation concern in New Mexico. This species is generally found in warm, arid climates at elevations ranging from about 2,250 to 7,998 feet. In the Southwest, it is found in juniper or piñon-juniper woodlands. It prefers open, juniper-dominated woodlands where large, mature trees are present. It is considered an important consumer of piñon seeds. Juniper titmice are unusual in the extent to which they are largely associated with one ecosystem, piñon-juniper forest. They will serve as a good indicator for piñon-juniper forest health.

Monitoring Topic (iii) Questions and Key Results

MQ 5: Are forest management activities within riparian areas increasing biodiversity or populations of riparian obligate species?

Table 22. Monitoring Question 5 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

We lost one core population of Rio Grande cutthroat trout due to the effects from the Hermit's Peak and Calf Canyon fire, however the remaining populations are intact. A northern leopard frog was found where stream restoration efforts have created back waters, caught sediment and has created more complex habitat. It is believed that frogs from the Valles Caldera National Preserve found their way into restored habitat.

Table 23. Monitoring Question 5 Indicator Status Summary

Indicator	Result
Abundance and distribution of Rio Grande cutthroat trout	+ -
Abundance and distribution of Northern leopard frog	++
Abundance and distribution of Plumbeous vireo	++
Abundance and distribution of Cordilleran flycatcher	++

MQ 8: Are aquatic and terrestrial habitats connected and do they provide the necessary ecological conditions to allow animals to move freely about the forest?

Table 24. Monitoring Question 8 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

We are moving toward attaining this monitoring question. Collaborating with partners, we will develop a digital survey to track beaver activity in the Forest and utilize citizen science to the extent possible. We are pursuing multiple stream restoration projects and are aiming to entice beaver to recolonize abandoned areas. Improving range management in the Forest can significantly improve the chances that beaver can reoccupy an area.

Multiple partners are working together in a new Beaver Coalition. This group contains non-profit members, federal and state partners. In the coming years, beaver restoration will scale up and could include translocations and continuance of habitat improvement projects.

MQ 11: Are conditions within ponderosa pine systems providing the structural components that are representative of reference seral state conditions (see FW-PPF-DC-1)?

Table 25. Monitoring Question 11 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

We only have anecdotal evidence for post-fledgling family area abandonment as it pertains to forest management activities. However, new monitoring protocols are in place that should give us better data for timber sales that contain post-fledgling family areas.

MQ 12: Are conditions within piñon-juniper systems providing the ecological conditions that are representative of reference seral state conditions (for example structural components, percent canopy, and species composition)?

Table 26. Monitoring Question 12 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

The Santa Fe's Wildlife, Fish and Rare Plants program is beginning to create partnerships which can inform this monitoring question using citizen science, and targeted bird surveys or Acoustical Recording Units to sample specific ecological response units. We are in the beginning stages of these partnerships and hope to inform this monitoring question soon.

Status of Select Set of Ecological Conditions Required to Contribute to Species Recovery

Viability for at-risk species should be maintained or increased when the ecological conditions on which they rely improve or achieve reference conditions. There are 36 at-risk species identified on the SFNF (4 federally listed and 32 species of conservation concern) all of which rely on quality habitat. Quality habitat is defined by ecological conditions that are at or approaching reference condition, as well as abiotic (non-living features like water or rock) and geological features (e.g., cliff and rock formations) that provide the life-cycle requirements for a particular species.



Photo 3. Mexican Spotted Owl. Photo credit: USDA Forest Service photo by Andre Silva

There are five at-risk species dependent upon seral state conditions within ponderosa pine forest, three birds (Mexican spotted owl, northern goshawk, and Lewis's woodpecker), one invertebrate (Jemez woodland snail), and one plant (wood lily) most of which respond differently to ecological conditions created by seral state composition.

The Mexican spotted owl and the northern goshawk are extremely dependent upon the structural components provided by in-reference seral state condition. These structural components provide nesting, roosting, and foraging sites for these forest dwelling birds. With an overabundance of medium to large trees in ponderosa pine forest, the structural requirements of the forest (primarily the size, shape, and amount of trees) is out of reference and therefore degrades the habitat for both the goshawk and the owl, the latter of which also depend on the recruitment of large snags.

Northern goshawk typically nests in ponderosa pine or mixed conifer forests but are often found feeding in riparian areas; therefore, vegetative conditions trending toward desired conditions in ponderosa pine forest, mixed conifer with frequent fire, and riparian areas will increase or maintain viability for that species. Because northern goshawks require specific structural requirements, they will serve as an excellent indicator for ponderosa pine forest health.

Monitoring Topic (iv) Questions and Key Results

MQ 11: Are conditions within ponderosa pine systems providing the structural components that are representative of reference seral state conditions (see FW-PPF-DC-1)?

Table 27. Monitoring Question 11 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

We only have anecdotal evidence for post-fledgling family area abandonment as it pertains to forest management activities. However, new monitoring protocols are in place that should give us better data for timber sales that contain post-fledgling family areas.

MQ 15: Are Forest management activities and/or natural events affecting the ecological conditions that contribute to the recovery of the federally listed species?

Table 28. Monitoring Question 15 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

To comply with legal requirements of the Endangered Species Act, the SFNF collects the data as needed and is responsible to ensure that actions we authorize, carryout or otherwise fund are improving, maintaining or enhancing species habitat. We are confident this can be answered as it relates to management activities. The question of the impact of naturally occurring phenomena on recovery is unlikely to be answered with collected data.

Table 29. Monitoring Question 15 Indicator Status Summary

Indicator	Result
Endangered species-specific habitat requirements (for example snags per acre, coarse woody debris, old growth characteristics, patch size, etc.)	++
Management actions completed to improve habitat (acres improved)	++

Visitor Use, Satisfaction, and Progress on Recreation Objectives

National forests of the United States provide a diversity of outdoor recreation opportunities, connecting people with nature in an unmatched variety of settings and activities. Approximately 1.3 million people visit the forest annually, and their primary reason for visiting is recreation. Recreation contributes greatly to the physical, mental, and spiritual health of individuals; bonds family and friends; instills pride in heritage; and provides economic benefits to communities, regions, and the Nation. Hiking, mountain biking, camping, fishing, hunting, backpacking, rock climbing, birdwatching, horseback riding, swimming, piñon gathering, driving, sightseeing, and photography are just some of the ways people spend their time in the SFNF every day. Enjoying the natural scenic beauty and natural features of the forest environment is among one of the top recreation activities in the SFNF.

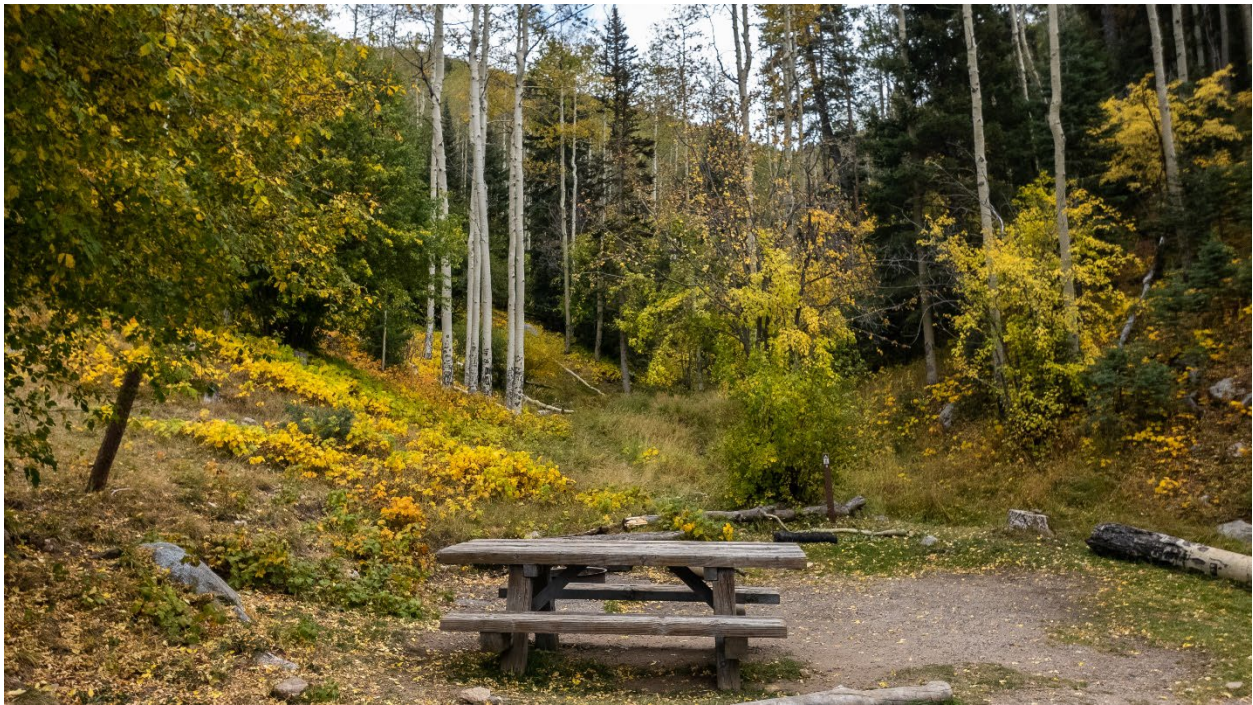


Photo 4. Fall foliage in the Santa Fe National Forest. Photo credit: USDA Forest Service photo by Gabriel Chavez

The Jemez National Recreation Area is the only national recreation area in the southwestern region. Four of New Mexico's eight national scenic byways traverse the SFNF, as well as the Continental Divide Trail, one of the Nation's 11 national scenic trails. Two national recreation trails and three of the Nation's 19 national historic trails also pass through the SFNF.

Monitoring Topic (v) Questions and Key Results

MQ 16: Are developed recreation sites meeting the needs, desires, and expectations of visitors?

Table 30. Monitoring Question 16 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The national visitor use monitoring program is a five-year rotating cycle of visitor use monitoring that provides critical information and is the most reliable sourcing of public opinion and engagement. The next collection period is scheduled for 2024.

The Recreation.gov rating report provides valuable feedback; however, this is based off a voluntary rating system and does not capture all voices or opinions. Averages were favorable for the SFNF in 2022 at 4.42 out of 5, and 4.4 out of 5 for 2023. This means we are generally meeting expectations for reservable sites in campgrounds.

Fee dollars collected are on a slight downward trend for over-the-counter sales and a slightly upward trend in Recreation.gov revenue. There was a substantial dip in data for 2022, which saw a significant decrease in fee revenue because of two large wildfire closures that impacted the recreation user base. Recreation managers have an opportunity to opt-in or -out of Recreation.gov use at sites at the beginning and end of each fiscal year. Sites having reservations turned on has increased the Recreation.gov fees against the over-the-counter fees collected.

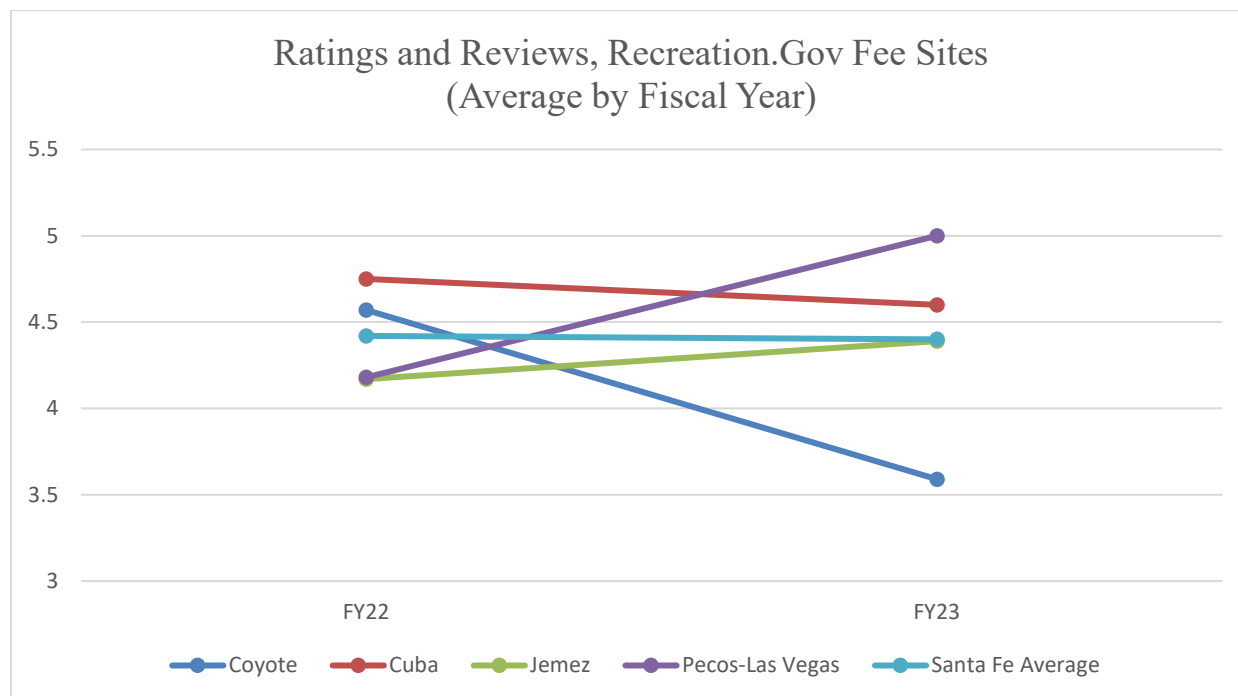


Figure 5. Ratings and Reviews, Recreation.Gov Fee Sites

MQ 17: (a) Are system trails located and maintained to prevent resource degradation and to support allowable uses? (b) Are system trails meeting the needs, desires, and expectations of multiple users?

Table 31. Monitoring Question 17 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

Trail annual accomplishments per fiscal year shows an increase in percent of National Forest System Trail miles meeting standard from fiscal year 2022 through 2023 at the Forest-level. Individual districts see data decay; this may be attributed to lack of staffing or redirecting of Youth Corps to developed and general forest areas for project work.

Volunteer hours dedicated to the SFNF's trails program sees data decay. This is a direct result of numerous trails on the SFNF being heavily impacted by the Hermit's Peak and Calf Canyon and Cerro Pelado wildfires in 2022 and the Black Feather fire in 2023.

The national visitor use monitoring program is a five-year rotating cycle of visitor use monitoring that provides critical information and is the most reliable sourcing of public opinion and engagement. The next collection period is scheduled for 2024.

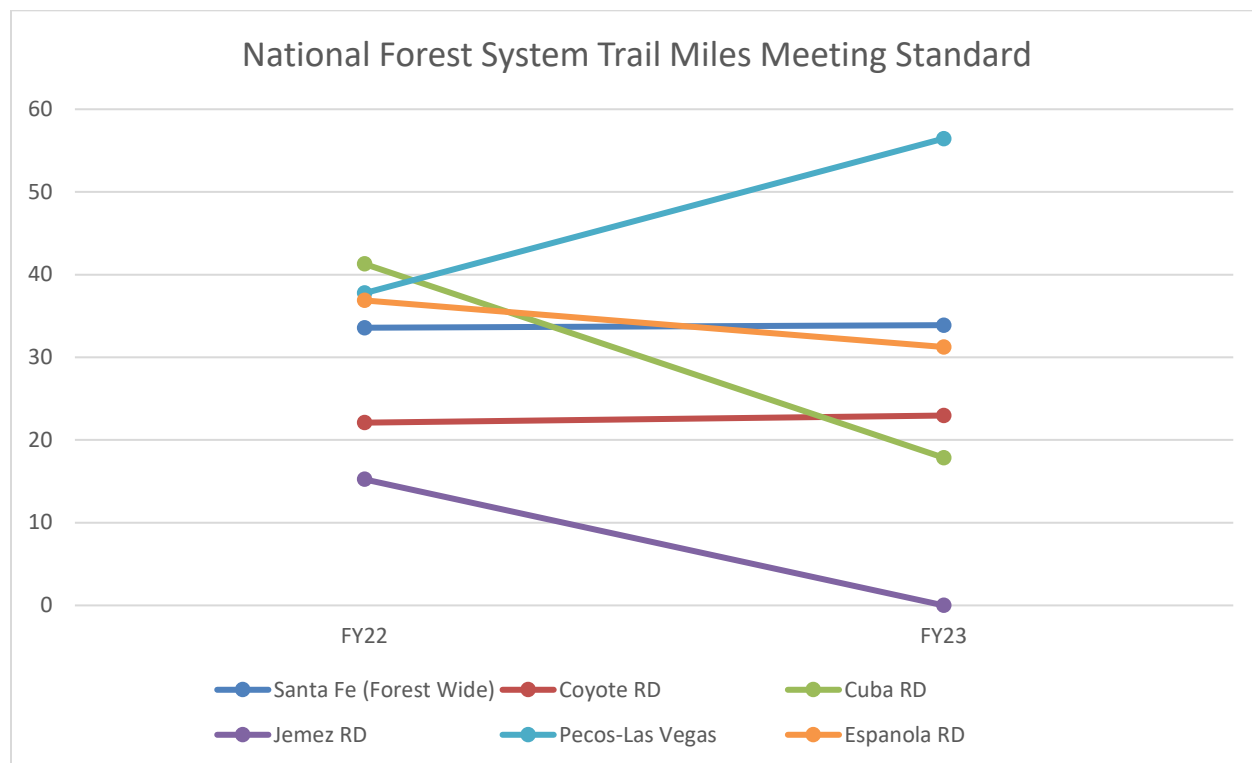


Figure 6. National Forest System Trail Miles Meeting Standard

MQ 18: Are management activities improving wilderness character in our designated wilderness areas?

Table 32. Monitoring Question 18 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The wilderness character monitoring reports rely on field visits and stewardship from Forest Service staff and volunteers to report on identified indicators for wilderness health. The closer to zero the values are, the closer the wilderness area is to pristine wilderness.

Interpretation of the wilderness character monitoring reports through the Natural Resource Management program indicate that the Chama River Canyon and Dome Wilderness are high-character wilderness areas with numerous averages at or near zero. However, this may be a result of false positives through lack of staffing and volunteer engagement to provide adequate monitoring. More focused monitoring will need to be provided in coming fiscal years to provide a more holistic review of the Chama River Canyon and Dome Wilderness Areas.

The Pecos Wilderness indicates a significant spike in authorized actions and structures in 2023; this is a result of the Hermit's Peak and Calf Canyon wildfire response. The San Pedro Parks Wilderness also indicates a spike in authorized actions and structures in 2023; this is a response to the Black Feather wildfire. The same is true for emergency motorized and mechanized use.

Volunteer service sees a slight increase across 2022 through 2023. There is a more substantial increase in appraised dollars through this program; however, the value of these dollars remains high for the hours committed. Volunteer service reporting does not provide specifics on where these volunteer hours are committed, it only indicates hours committed to the Forest. Nearly 3 person years were dedicated to the SFNF Wilderness Areas from 2022 through 2023.

Table 33. Monitoring Question 18 Indicator Status Summary

Indicator	Result
Score in Wilderness Stewardship Performance	++
Dispersed campsite monitoring in wilderness areas	

MQ 21: To what extent is public education and interpretation provided on cultural and historic resources?

Table 34. Monitoring Question 21 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

There is no previous report with which to compare the current results, and the indicators do not clarify the target, however it appears the desired condition and monitoring question is aimed at simply providing the opportunity for public education and interpretation, to which we have during this reporting period.

Table 35. Monitoring Question 21 Indicator Status Summary

Indicator	Result
Number of interpretive sites	++
Number of interpretive opportunities (talks, tours, activities, etc.)	++
Volunteer hours logged	++

Climate Change and Other Stressors

Climate change is anticipated to have lasting, large-scale impacts to a variety of ecological, social, and economic resources around the Santa Fe National Forest (FEIS Vol. 1, p. 379). Climate change predictions include the mean monthly minimum temperature (spring and autumn), and the mean monthly maximum temperature (winter) may rise above freezing more months out of the year. Seasonal precipitation is projected to be slightly higher in winter and spring (FEIS Vol. 1, p. 337). One characteristic of climate change in northern New Mexico is more frequent drought than historical averages (FEIS Vol. 1, p. 160). As climate change continues to bring warmer temperatures, water loss to the atmosphere (through evapotranspiration and soil desiccation) will rise (FEIS Vol. 1, p. 182). Climate change in the southwest is predicted to result in a hotter and drier environment, with more variability in year-to-year precipitation, earlier snowmelt, and summer monsoonal precipitation is projected to decline, although model results are varying (FEIS Vol. 1, p. 184). Future potential ecological effects in the Southwest may include an increase in more intense disturbance events such as wildfires, monsoons, and wind (FEIS Vol. 1, p. 340).

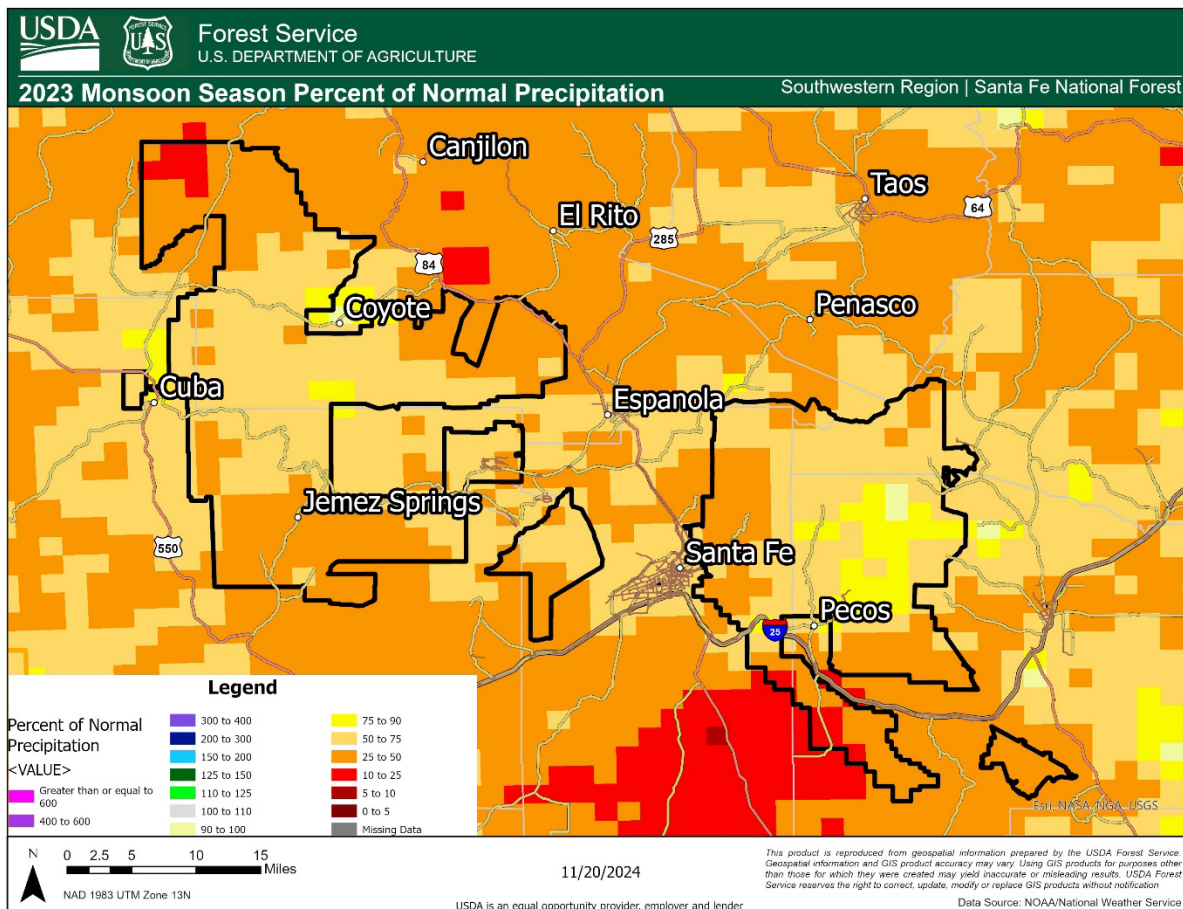


Figure 7. 2023 Monsoon Season (June 15 through September 30) Percent of Normal Precipitation

Interacting stressors may include fire, insects, invasive species, loss of spatial connectivity, disruption of natural disturbance regimes, geologic hazards, water withdrawals and diversions, and changes in social, economic, and cultural conditions that affect the plan area, among others.

Monitoring Topic (vi) Questions and Key Results

MQ 6: Is aquatic habitat distributed, connected, and in a condition capable of supporting native aquatic species?

Table 36. Monitoring Question 6 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

We know invasive aquatic species are becoming more prevalent and resources and focus to address those issues are lacking. However, instream habitat restoration work is moving in a positive direction in the SFNF and those indicators outside targets will need focused on soon to the extent practical. In general, the SFNF is moving in a more positive direction under the new plan and making progress on monitoring indicators.

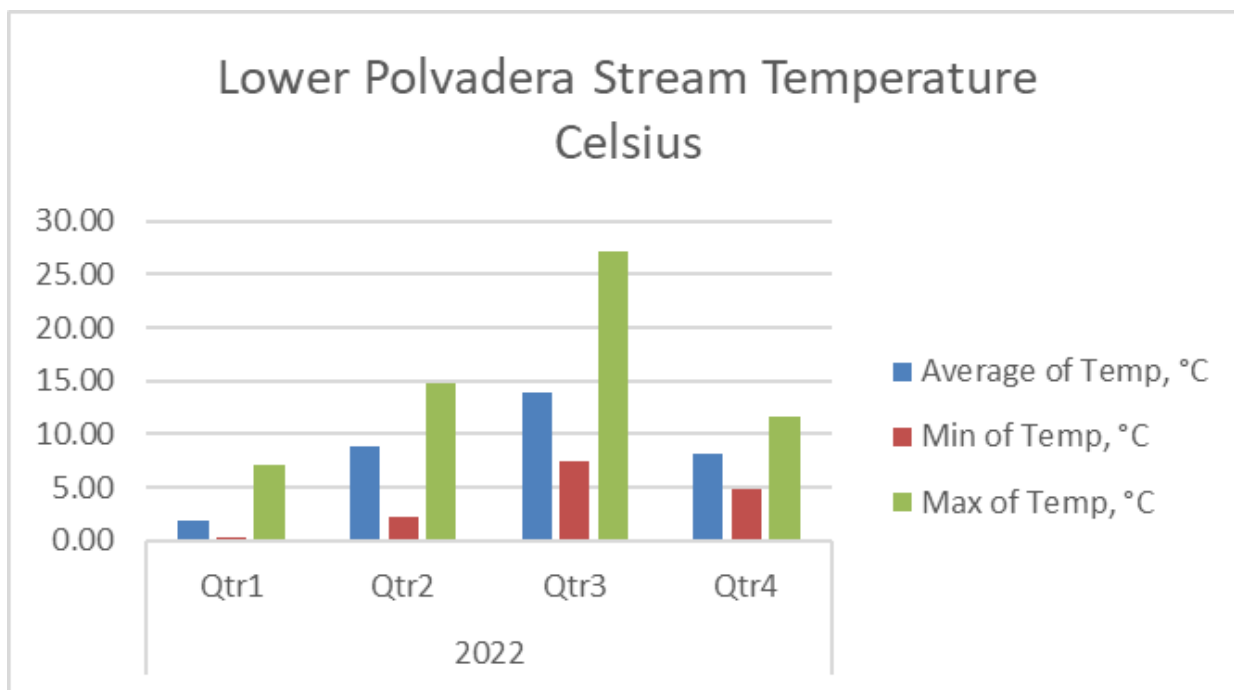


Figure 8. Quarterly Lower Polvadera stream temperature for 2022, reported in degrees Celsius

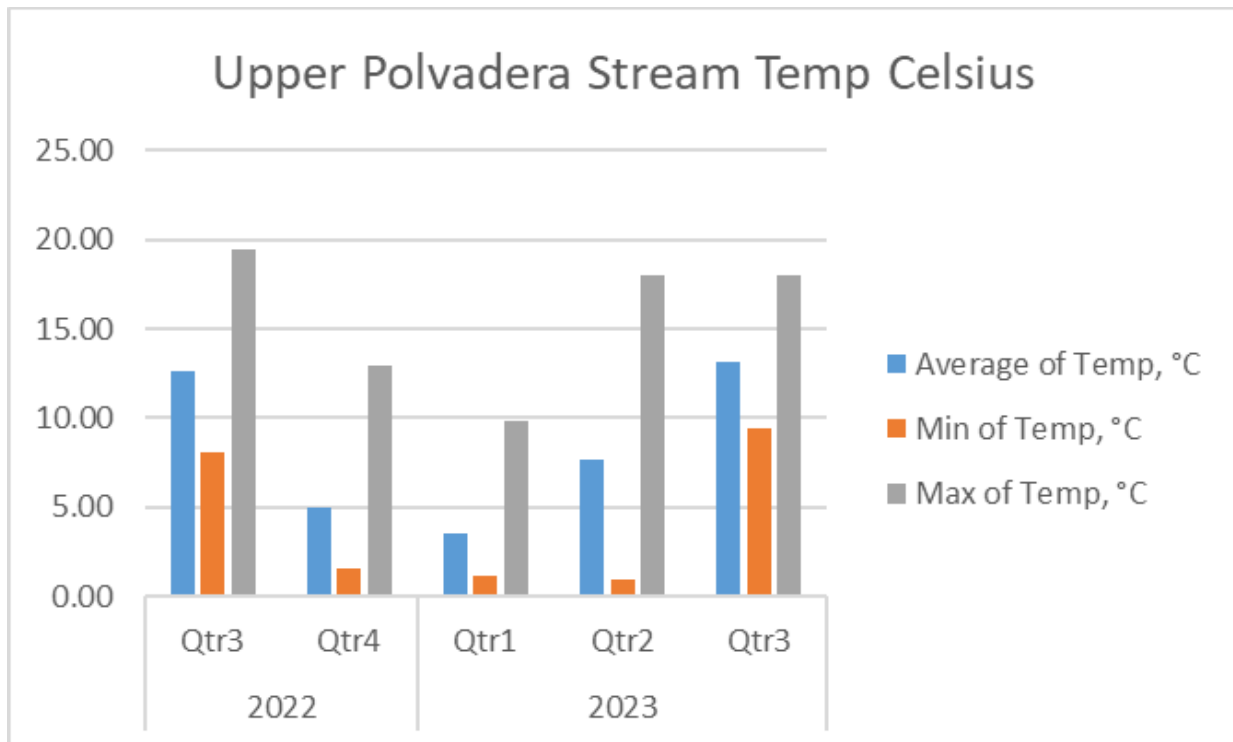


Figure 9. Quarterly Upper Polvadera stream temperature, reported in degrees Celsius

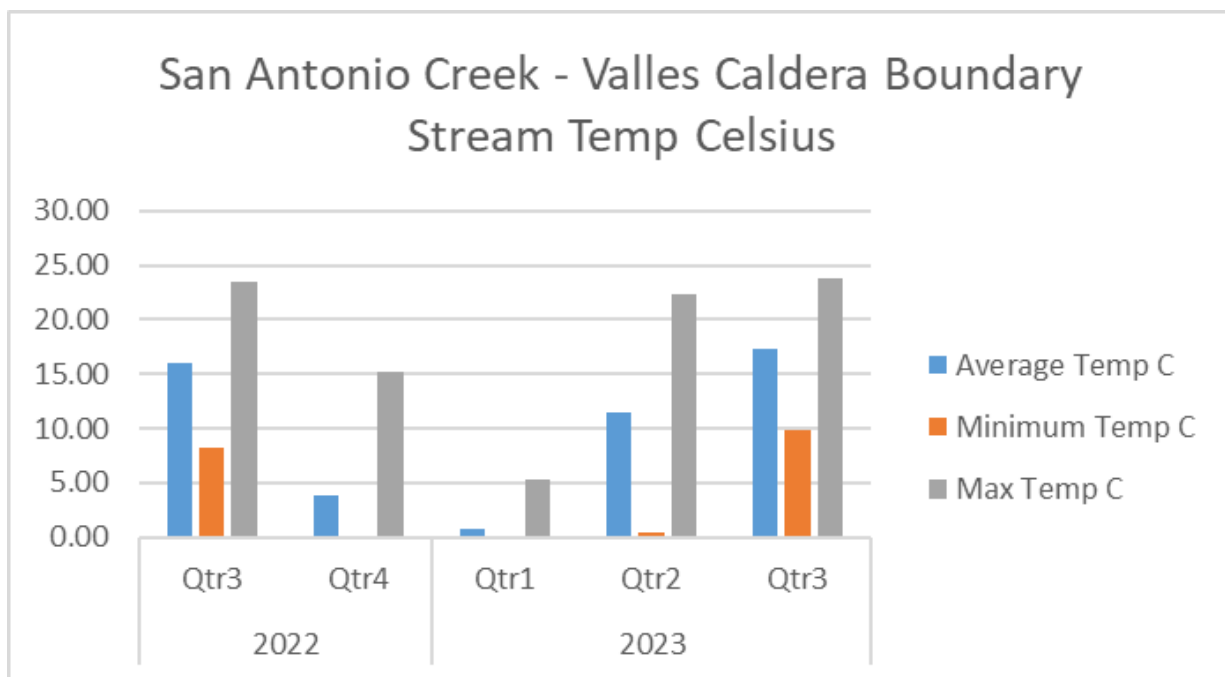


Figure 10. Quarterly San Antonio Creek – Valles Caldera boundary stream temperature, reported in degrees Celsius

MQ 7: Are management activities moving terrestrial habitat towards desired conditions?

Table 37. Monitoring Question 7 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

Overall, we are moving towards targets with exception of improving rangelands. The presence of endemic, at-risk species is tracked and implemented project by project.

MQ 9: Are management practices moving woodland and grassland vegetation systems with plan objectives (JUG, PJG, CPGB, SAGE, and MSG) toward desired conditions and increasing their resilience to future disturbances?

Table 38. Monitoring Question 9 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

Range and grazing monitoring data over the past years has been insufficient to capture precise data. The data shows that we are currently well below targets with zero accomplishments under the 2022 Forest Plan and are not on track for meeting desired annual or 10-year goals, however current planning efforts should allow for increased pace and scale for future implementation project areas. Data collection scheduled for 2026 will provide a better data set for the next reporting period.

MQ 10: Are management practices moving ponderosa pine (PPF) and mixed conifer-frequent fire (MCD) forests toward desired conditions and increasing their resilience to future disturbances?

Table 39. Monitoring Question 10 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The only signed decision under the Forest Plan with active implementation is the Santa Fe Mountains Landscape Resiliency Project signed in May 2023. We have only accomplished one percent of the annual target on mixed conifer frequent fire ecological resource unit, however current planning efforts should allow for increased pace and scale for future implementation that will provide more opportunities to meet the desired 10-year objectives.

MQ 13: What is the status and trend of invasive plant species in the plan area?

Table 40. Monitoring Question 13 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

The general trends are in the right direction. We have created best management practices, surveyed for invasives, and contracted for treatment. However, we have seen a rapid increase in invasive species mapped in the SFNF. This could be a result of increased awareness and education. The acres infested in the SFNF are higher than anticipated in the plan assessment. We have also had a change in condition with the Hermit's Peak and Calf Canyon fire. There has been an exponential increase in the invasives identified in the SFNF. Survey 123 has been a very efficient tool for collecting invasive data, and our partners are taking full advantage of it.

Social, Economic, and Cultural Sustainability

This monitoring topic addresses contributions to communities, social and economic sustainability of communities, multiple use management in the plan area, or progress toward meeting the desired conditions and objectives related to social and economic sustainability. The purpose for monitoring social, cultural, and economic indicators is to: (1) inform managers and the public of changes in social, cultural, and economic conditions that are influenced by the plan; (2) monitor contributions of the management of the plan area toward meeting social, cultural, and economic attributes of desired conditions; and (3) provide feedback for adaptive management toward expected and potential contributions to social and economic sustainability.



Photo 5. Firewood cutting. Photo credit: USDA Forest Service photo by Julie Luetzelschwab

Monitoring Topic (ix) Questions and Key Results

MQ 19: Is the forest providing resources important for subsistence and economic support to rural historic and tribal communities in quantities sufficient to meet their needs?

Table 41. Monitoring Question 19 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

There are currently no assigned targets or goals to achieve other than to supply forest products to meet the demand. Current trends show that the Free Use for Ceremonial and Traditional gathering may be underutilized due to lack of demand. We established the necessary product plans and identified areas sufficient to meet anticipated demand of timber and special forest products.

As the Tribal Relations program in the SFNF continues to expand with the addition of an Assistant Tribal Relations Liaison in 2023, requests for Forest Products Collection letters are trending upward and should continue, especially as tribal populations increase so will the need for more fuelwood to heat homes.

No new science or information collected outside of this monitoring program was considered in the evaluation of this monitoring question. However, new home construction is visibly advancing within many Pueblo communities. The heating source for these new homes is unknown and may not be fuelwood from National Forest System lands.

Partnership with National Forest Foundation with Wood for Life program resulted in more fuelwood for Navajo Nation communities near the Cuba Ranger District.

Continued SFNF support for Jemez Pueblo's Walatowa Timber Industries has resulted in continuous productivity at the mill contributing to the economic benefits for the tribe.

Table 42. Monitoring Question 19 Indicator Status Summary

Indicator	Result
Number of permits sold for: fuelwood, vigos, collection of plants, latillas, and Christmas trees	++
Trends in satisfaction: consultations with Tribes	++

MQ 20: (a) Are cultural and historic resources being identified and are mitigation measures taken to provide adequate protections from management actions, looting, and other disturbances? (b) Are projects complying with cultural resources reports?

Table 43. Monitoring Question 20 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Not Answered
Change to Forest Plan	Not Answered
Change to management activities	Not Answered
Change to monitoring plan	Not Answered
Assessment	Not Answered

No sites were reported as looted and entered into the Natural Resource Management Heritage database during this reporting period. Data sources are insufficient to evaluate whether cultural resources reports are complied with. The data are insufficient to evaluate the current status and trends.

MQ 21: To what extent is public education and interpretation provided on cultural and historic resources?

Table 44. Monitoring Question 21 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Yes
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

There is no previous report with which to compare the current results, and the indicators do not clarify the target, however it appears the desired condition and monitoring question is aimed at simply providing the opportunity for public education and interpretation, to which we have during this reporting period.

MQ 22: Are outputs of timber and other forest products being produced at a rate consistent with projections and in quantities sufficient to meet needs for personal use and local timber industries?

Table 45. Monitoring Question 22 Recommendation Summary

Recommendation	Response
Forest Plan direction met	Uncertain
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

Trends show that we meet or exceed annual volume targets by offering and authorizing forest products to forest products industry and public use to consistently achieve 10-year goals. Trends show that we are well below annual limits for sustainable-yield level (SYL), project wood sale quantity (PWSQ), and projected timber sale quantity (PTSQ).

Table 46. Monitoring Question 22 Indicator Status Summary

Indicator	Result
CCF provided for industry	++
CCF for fuelwood	++
Sales to be offered	++
% of regeneration harvests restocked in 5 years	
Amount of timber harvested relative to annual amount allowed for sustainable-yield (SYL).	++
Amount of timber harvested relative to annual amount according to Projected Wood Sale Quantity (PWSQ).	++
Amount of timber harvested relative to annual amount according to Projected Timber Sale Quantity (PTSQ).	++

MQ 23: Is the forest moving towards desired conditions by providing grazing opportunities in support of our local economies?

Table 47. Monitoring Question 23 Recommendation Summary

Recommendation	Response
Forest Plan direction met	No
Change to Forest Plan	No
Change to management activities	No
Change to monitoring plan	No
Assessment	No

We have some very minimal monitoring. Our trend monitoring is currently indicating an increase in vegetative cover and production. This is a good trend. Use caution with looking at this as the sample size is small and not indicative of conditions across the Forest. At our current levels of data collection, it will take at least 5 to 10 years to get a handle on the condition and trend across the Forest. Using digital data collection and Survey 123, will help answer this question. Any monitoring data also needs to be tempered with the weather during the time the data was collected. In dry years, we may not be able to meet stubble height standards, but if we meet or exceed them in other years, we should be grazing in a sustainable manner. Condition and trend is not reflected in any DC.

We will be able to meet the five percent infrastructure standard as the Forest is responsible for only a portion of that. The rest of the infrastructure is the responsibility of the permittee to maintain, and we currently do not report the miles of fence maintained by the permittee in any given year. We do report the condition of their fences when we inspect them in Survey 123.

Table 48. Monitoring Question 23 Indicator Status Summary

Indicator	Result
Level of permitted livestock grazing (AUM)	++
Number of closed and vacant allotments	+
Number of acres of rangeland vegetation improved	-
Allotments administered to standard	-
Percent of range infrastructure improved	+

Summary of Results and Recommendations

SFNF monitoring questions and evaluation addressed in this report. Possible types of recommendations include changes to the Forest Plan or monitoring plan, changes in management activities, or recommendations for a new focused assessment.

Table 49. Monitoring questions, results, and recommendations

Monitoring question (MQ)	Progress Toward Forest Plan Desired Conditions and Objectives	Recommendations
MQ 1: Are management activities maintaining or improving watershed function and implementing best management practices to minimize impacts and improve water quality?	8,733 acres of project implementation improved soil and water resources. 170 miles of roads were maintained; however, documentation is insufficient to determine if this maintenance mitigated impacts to the point of restoring hydrologic and ecological function.	No changes recommended.
MQ 2: Are all prescribed and managed wildfires conducted in accordance with state air quality regulations governing prescribed and managed wildfire?	Forest remains within air quality standards.	No changes recommended.
MQ 3: (a) Are management actions maintaining or improving soil (ground) cover, contributing to improved soil condition? (b) Are management actions resulting in significant changes to the productivity of the land?	Insufficient data due to lack of sampling protocols and implementation schedule.	No changes recommended.
MQ 4: Are management actions maintaining or moving riparian vegetation towards desired conditions?	64.46 acres of beaver dam analog 1.4 acres of streambank stabilization 2.9 acres of structure addition-habitat 0.87 acres of wetland restoration 47.6 acres of invasive species management 27.8 acres of riparian planting 29 acres of wildlife enclosure fence	No changes recommended.
MQ 5: Are forest management activities within riparian areas increasing biodiversity or populations of riparian obligate species?	Unclear if results are progressing as desired. The rate of change cannot yet be calculated for any species. There has not been enough focused monitoring efforts or time for this first report to yield any results.	No changes recommended.

Monitoring question (MQ)	Progress Toward Forest Plan Desired Conditions and Objectives	Recommendations
MQ 6: Is aquatic habitat distributed, connected, and in a condition capable of supporting native aquatic species?	4.7 miles of stream restoration	No changes recommended.
MQ 7: Are management activities moving terrestrial habitat towards desired conditions?	2,037 acres of terrestrial habitat improved 2,128 acres of rangeland improved	No changes recommended.
MQ 8: Are aquatic and terrestrial habitats connected and do they provide the necessary ecological conditions to allow animals to move freely about the forest?	Developing the Beaver Coalition, but no reportable progress for this reporting period.	No changes recommended.
MQ 9: Are management practices moving woodland and grassland vegetation systems with plan objectives (JUG, PJG, CPGB, SAGE, and MSG) toward desired conditions and increasing their resilience to future disturbances?	Range and grazing monitoring over the past years has been insufficient to capture precise data. No accomplishments reported under the current Forest Plan.	No changes recommended.
MQ 10: Are management practices moving ponderosa pine (PPF) and mixed conifer-frequent fire (MCD) forests toward desired conditions and increasing their resilience to future disturbances?	69 acres of dry mixed conifer (MCD) mechanical treatments completed.	No changes recommended.
MQ 11: Are conditions within ponderosa pine systems providing the structural components that are representative of reference seral state conditions (see FW-PPF-DC-1)?	Two new post-fledgling family areas were found and delineated in 2022.	No changes recommended.
MQ 12: Are conditions within piñon-juniper systems providing the ecological conditions that are representative of reference seral state conditions (for example structural components, percent canopy, and species composition)?	Developing partnerships using citizen science, but no analysis has occurred to date.	No changes recommended.
MQ 13: What is the status and trend of invasive plant species in the plan area?	1,858 miles of trails and disturbed areas surveyed. 7 acres of diffuse knapweed treated.	No changes recommended.
MQ 14: Is wildland fire being used to maintain desired fuel levels and vegetation characteristics, at frequencies and severities consistent with the natural range of variability?	11,406 acres of Ponderosa Pine (PPF) ERU were treated. 9,077 acres of the dry mixed conifer (MCD) were treated.	No changes recommended.
MQ 15: Are Forest management activities and/or natural events affecting the ecological conditions	2,037 acres habitat enhanced	No changes recommended.

Monitoring question (MQ)	Progress Toward Forest Plan Desired Conditions and Objectives	Recommendations
that contribute to the recovery of the federally listed species?		
MQ 16: Are developed recreation sites meeting the needs, desires, and expectations of visitors?	4.42 out of 5 average rating Recreation.Gov fee sites in 2022 4.4 out of 5 average rating Recreation.Gov fee sites in 2023	No changes recommended.
MQ 17: (a) Are system trails located and maintained to prevent resource degradation and to support allowable uses? (b) Are system trails meeting the needs, desires, and expectations of multiple users?	National Forest System trail miles meeting standard: • 33.58% in 2022 • 33.89% in 2023 Volunteer hours dedicated to the trails program: • 3,480 in 2022 • 1,459 in 2023 Average User Rating: • Very satisfied with feeling of safety • Very satisfied with scenery • Neither satisfied nor dissatisfied with signage adequacy • Somewhat satisfied with trail condition	No changes recommended.
MQ 18: Are management activities improving wilderness character in our designated wilderness areas?	Average wilderness character monitoring trends: • Untrammeled ○ 0.375 average number of authorized actions/structures per year • Natural ○ 2,119.3675 average number of commercial livestock per year • Undeveloped ○ 33.5 average number of emergency motor/mechanized use per year ○ 7 inholdings per year ○ 74 non-recreation development per year • Solitude ○ 290.875 average number of National Forest System trails per year ○ 9.25 average number of visitor management per year	No changes recommended.
MQ 19: Is the forest providing resources important for subsistence	Permits issued • 5,652 in 2023	No changes recommended.

Monitoring question (MQ)	Progress Toward Forest Plan Desired Conditions and Objectives	Recommendations
and economic support to rural historic and tribal communities in quantities sufficient to meet their needs?	• Average 23% issued under free-use 7 Forest Products Collection letters issued and active	
MQ 20: (a) Are cultural and historic resources being identified and are mitigation measures taken to provide adequate protections from management actions, looting, and other disturbances? (b) Are projects complying with cultural resources reports?	Sites identified or updated • 377 in 2022 • 89 in 2023 0 sites identified as looted Cultural resources reports completed • 37 in 2022 • 14 in 2023	No changes recommended.
MQ 21: To what extent is public education and interpretation provided on cultural and historic resources?	4 interpretive sites Interpretive opportunities • 10 in 2023 Volunteer hours logged • 400 in 2023	No changes recommended.
MQ 22: Are outputs of timber and other forest products being produced at a rate consistent with projections and in quantities sufficient to meet needs for personal use and local timber industries?	Total Volume of Forest Products Accomplishments: • FY23: 27,276.72 CCF = 154% of annual volume target ○ 26,706.6 CCF fuelwood ○ 570.12 CCF other Sustained Yield Limit (SYL) Accomplishments: • FY23: 27,276.72 CCF = 38.6% of annual SYL goal Projected Wood Sale Quantity (PWSQ) Accomplishments: • FY23: 27,276.72 CCF = 51.8% of annual PWSQ goal Projected Timber Sale Quantity (PTSQ) Accomplishments: • FY23: 0.0 CCF = 0.0% of annual PTSQ goal	No changes recommended.
MQ 23: Is the forest moving towards desired conditions by providing grazing opportunities in support of our local economies?	1,396,877 acres grazed sustainably in 2022 1,396,881 acres grazed sustainably in 2023 10 miles of fence in the HPCC footprint and 10 drinkers built in 2023	No changes recommended.