



Forest Service
U.S. DEPARTMENT OF AGRICULTURE



Biennial Monitoring Evaluation Report for the Cibola National Forest Fiscal Years 2022-2024



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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 program, 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 plan monitoring program 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 plan monitoring program.

Every 2 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 plan monitoring program, 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.

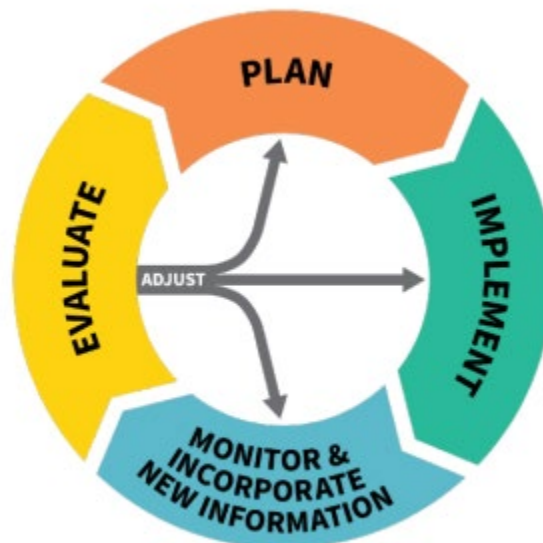
This land management plan provides direction and guidance for managing the National Forest System lands of the Cibola National Forest (also referred to in this document as “the Cibola”) and National Grasslands to include the four mountain ranger districts, excluding the national grasslands. The Kiowa, Rita Blanca, Black Kettle, and McClellan Creek National Grasslands of the Cibola National Forest and National Grasslands are addressed separately in the Land and Resource Management Plan for the Kiowa, Rita Blanca, Black Kettle, and McClellan Creek National Grasslands, which was completed in 2012.

The 2022 Cibola National Forest Land Management Plan is available on our website
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1043432.pdf

The plan monitoring program is in Chapter 5, pages 169 to 184.

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.



About Our Plan Monitoring Program

Purpose

The purpose of this, the Cibola National Forest’s first Biennial Monitoring Evaluation Report (BMER), is to inform our partners, stakeholders, government agencies, tribal communities, and the public about the status of monitoring of the forest plan implementation in the Cibola National Forest. This BMER will display monitoring data from the fiscal years 2022-2024. The monitoring results within this document will aid the forest supervisor and regional forester to determine whether the forest is on track with compliance to the forest plan and highlight needed changes in the forest plan direction, its key components, and guiding material that is crucial in guiding resource management practices on Cibola National Forest. This monitoring report evaluates the monitoring questions and indicators detailed in Chapter 5, Monitoring and Evaluation of the Cibola National Forest Land Management Plan (July 2022) and reports the results of monitoring of management actions carried out in the forest as dictated by the aforementioned land management plan.



Figure 1: Kiwanis Cabin, Sandia Ranger District. Photo Courtesy Jamey Browning/USFS.

Photo Description: A structure built of beige stones piled atop one another positioned on the edge of a cliff. Pine trees shelter one side of the structure. A dark doorway set in the middle of the structure facing viewer. Blue sky and clouds in the backdrop.

Objectives of Biennial Monitoring Evaluation and Report:

- Determine that the forest plan monitoring guidelines are being applied to project areas, activities, and designated monitoring questions.
- Evaluate data from monitoring indicators to decipher trends or effects on forest resources, and if the plan implementation is moving towards desired conditions.
- Highlight scheduled monitoring that has not been completed or is not able to be collected accurately. Explain the reasons behind unaccounted for monitoring data.
- Present the results of completed forest plan implementation, monitoring, and evaluation.
- Highlight recommended changes to existing indicators, methods, forest plan directions, monitoring questions, or management procedures and present the recommendations to forest leadership.

The Cibola National Forest Land Management Plan addresses the following topics (pp. 170-183, July 2022).



Watershed Conditions.
Terrestrial and Aquatic
Ecosystems



Ecological Conditions
for At Risk Species,
Focal Species



Visitor Use and
Recreation



Climate Change and
Desired Conditions



Productivity of the Land



Social, Economic and
Cultural Sustainability

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 our partners and work collaboratively with them to accomplish monitoring objectives. Some of the entities that we partner with include the University of New Mexico, New Mexico Highlands University, Bat Conservation International, Zuni Mountain Collaborative, Kirkland Air Force Base, National Wild Turkey Federation, The Forest Stewards Guild, New Mexico State Forestry, Rocky Mountain Youth Corp, The Nature Conservancy, Pueblo of Acoma, Pueblo of Santa Ana, Pueblo of Isleta, Albuquerque Mountain Bike Association, New Mexico Game and Fish, USDI-Bureau of Land Management, and many more.

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 Tribes and Pueblos.

Report Summary

This 2024 biennial monitoring evaluation report (BMER) for the Cibola National Forest documents monitoring activities that occurred during fiscal years 2022 through 2023. Resource specialists answered 15 of the 25 monitoring questions and used the designated indicators to determine if current activities described in the 2022 Cibola National Forest Land Management Plan Monitoring Program 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 available on request by contacting us at 2113 Osuna Rd. NE, Albuquerque NM 87113 or by reaching out to 505-346-3900 or brittany.lewellen@usda.gov. Each new monitoring report builds upon the evaluations and recommendations that precede it. This monitoring and evaluation report and previous reports are available at this [Monitoring and Evaluation Reports Database](#) where you can review previous recommendations made to move our forest toward the desired conditions and objectives in our land management plan.

Not all monitoring questions outlined in the Land Management Plan were answered in this report. For some questions, this was due to the frequency of reporting being on a 5-to-10-year cycle. For others, there was insufficient data at this time or data is skewed due to discrepancies created by the Covid 19 pandemic. We will address the status of these monitoring questions in the next monitoring report.

Opportunity for Public Engagement and Partnerships

We welcome your questions, suggestions, and feedback. We also welcome opportunities for partnerships to implement our plan monitoring program. Please reach out to the Forest Planner Brittany Lewellen at Brittany.lewellen@usda.gov, to share your ideas and feedback. This BMER describes the key results from our monitoring; in depth results, including additional graphics and tables, are available in the supplemental report and raw data is available upon request.

Next Steps for the Cibola

This report suggests changes that we are recommending to the plan monitoring program questions and the associated indicators. These changes will not affect any of the forest plan components. Some recommended changes are only administrative in nature, while others are substantive (36 CFR 219.13). A substantive change to a plan monitoring program is made only after notice to the public of the intended change and consideration of public comment.

The global Covid-19 pandemic has influenced the availability of data and may have influenced data integrity. Data typically collected in the field by the Forest Service, other agencies, and partners were either not collected or collected only partially. Therefore, data used in analyses as well as data used to establish a baseline from which to compare in the future may be skewed. Additionally, baseline data for monitoring themes like economic conditions and forest visitation may be atypical due to the substantial impact of the pandemic. Future biennial monitoring evaluation reports will evaluate results in the context of possible pandemic effects.

Table 1: Summary of findings for each plan component answerable in the 2024 BMER.

Monitoring Question	Consistency with Intent of Plan	Recommendations	Type of Change Required
<p>Watershed Are watersheds functioning properly? Are the indicators of properly functioning watersheds rated as good? Is soil quality being maintained or improved to satisfactory condition?</p>	Yes	More time is needed for a broader look at overall restoration efforts. Restoration projects have been implemented.	No Recommended Changes.
<p>Watershed Are best management practices prescribed to mitigate potential effects to watershed condition? Are they being implemented? Are they effective in protecting watershed condition, including water quality?</p>	Yes	Although BMPs have been implemented, monitoring for them needs to be done more frequently.	No Recommended Changes.
<p>Terrestrial and Aquatic Ecosystems Are management activities moving terrestrial habitat toward desired conditions?</p>	Uncertain	TEUIs do not represent actual habitat and should not be used to monitor changes in Forest seral states and species composition. Monitor at project scale instead.	Remove the indicator seral state proportions and species compositions of Terrestrial Ecological Response Units Acres of terrestrial habitat restored and extend frequency to 6 years.
<p>Terrestrial and Aquatic Ecosystems Are riparian areas in proper functioning condition? Are the indicators of proper functioning condition rated as satisfactory? Are management actions maintaining or improving riparian condition and contributing to proper functioning condition?</p>	Uncertain	A wider range of data sets from more districts are required to accurately answer this question.	No Recommended Changes.
<p>Terrestrial and Aquatic Ecosystems Are activities implemented to improve water resources features?</p>	Uncertain	Further assessment and inventorying across the Cibola National Forest are recommended to guide individual spring management and focal species: aquatic macroinvertebrates.	No Recommended Changes.

<p>Terrestrial and Aquatic Ecosystems Are invasive species locations changing?</p>	Uncertain	More collaborative data collection.	No Recommended Changes.
<p>Focal Species What is the area of forest occupied by the ash-throated flycatcher? Are management actions maintaining or improving habitat for Ash-throated flycatcher?</p>	No	Use presence/absence or occupancy data instead of proportion of occupied nesting territories.	Change the indicator proportion of nesting territories occupied from March to June habitat acreage to presence/absence using Breeding Bird point count surveys.
<p>Focal Species What is the area of Cibola occupied by Grace’s warbler? Are management actions maintaining or improving habitat for the Grace’s warbler?</p>	No	Recommend developing a sampling scheme that can be monitored at defined intervals to gain presence/absence or occupancy data.	Change the indicator proportion of nesting territories occupied from March to June habitat acreage to presence/absence using Breeding Bird point count surveys.
<p>Ecological Conditions for at Risk Species Is vegetation structure meeting or approaching desired conditions?</p>	Yes	Shift the method of data collection and its source away from LANDFIRE to FACTS.	Change LANDFIRE indicator to how successful treatments are compared to FACTS reporting.
<p>Productivity of the Land Are soils in satisfactory condition? Are management actions maintaining or improving vegetative ground cover and contributing to improved soil condition?</p>	Uncertain	More data is necessary to answer questions. Extend reporting frequency to allow more time for data collection.	Change the reporting frequency to 10 years.
<p>Socio-economic and Cultural Sustainability To what extent is the Cibola meeting land management plan objectives and moving towards desired conditions in providing forest products for personal use and demands of local timber industry?</p>	Uncertain	More time is needed to determine trends in sales.	Change the reporting frequency to 4 years

<p>Socio-economic and Cultural Sustainability Is the Cibola providing resources important for cultural and traditional needs and for subsistence and economic support to tribal communities?</p>	Yes	The Cibola recommends that future reports focus more on authorization letters, partnerships, and projects to evaluate this monitoring question.	Change indicator “free use permit” to partnerships.
<p>Social, Economic and Cultural Sustainability Is the Cibola providing resources important for subsistence and economic support to rural historic communities?</p>	Yes	N/A	N/A
<p>Social, Economic and cultural sustainability Is the Cibola moving toward desired condition by providing grazing opportunities in support of our local economies?</p>	No	More direct studies need to be conducted to provide more accurate results.	N/A
<p>Desired Conditions Is vegetation structure meeting or approaching desired conditions?</p>	Yes	Yes	Shift the indicator source away from LANDFIRE to FACTS.

Questions Omitted from FY24 Cibola National Forest Biennial Monitoring Report

Plan Component	Question	Reason for Omission
FW-DC-T R SP-9	Are management actions maintaining or improving the appropriate number, distribution, and recruitment of snags?	Frequency is every 5 years will be included in the FY28 BMER.
FW-DC-PF-01 (fine scale)	What is the area of Cibola occupied by the Grace's warbler?	Species currently not ecologically appropriate and lack of data.
FW-DC-REC-01 FW-DC-REC-03	What are the status, trends, and conditions of visitor satisfaction on the Cibola National Forest?	Frequency is every 6 years will be included in the FY30 BMER.
FW-DC-CC-01	Are plant communities migrating in response to climate change?	No data available or capacity to collect data.
FW-DC-GR-01	Are rangelands providing adequate forage resources to sustain traditional lifestyles, socioeconomic diversity, and cultural identity of local communities?	Frequency is every 10 years will be included in the FY34 BMER.
FW-DC-GR-03 FW-DC-GR-04 FW-DC-GR-05	Is rangeland condition moving towards identified vegetation desired conditions, ecological site potential, or both?	Frequency is every 10 years will be included in FY34 BMER.
FW-DC-ID-01	Are insect and disease levels within the natural range of variability?	Frequency is every 5 years will be included in the FY28 BMER.
FW-DC-VEG-02	Are our management actions moving us towards our desired conditions?	Frequency is every 10 years will be included in FY34 BMER.
FW-DC-CHR-06 FW-DC-CHR-05	Is the Cibola providing interpretive and educational opportunities to the public about cultural and historic resources?	Data due to COVID is skewed and cannot be used in this BMER. Will be in FY26 BMER.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred from fiscal year 2022 through fiscal year 2024 on the Cibola National Forest.

I have evaluated the monitoring and evaluation results presented in this report, and I endorse them. I have examined the recommended changes to the 2022 Cibola National Forest Land Management Plan at this time. I therefore consider the 2022 Cibola National Forest Land Management Plan sufficient to continue to guide land and resource management of the Cibola National Forest and plan a deeper examination of the recommended changes through engagement with resource specialists.

X

Heidi McRoberts
Forest Supervisor

Status of Select Watershed Conditions

The Cibola National Forest is a diverse and ecologically significant landscape that plays a crucial role in the sustainability of regional water resources. This monitoring report provides an in-depth assessment of the current watershed conditions across the forest, offering vital insights into the health and functionality of its water systems. Given the forest's importance in supporting both ecological integrity and human communities, understanding these watershed conditions is essential for effective management and conservation strategies.



Figure 2: McGaffey Lake, Zuni Mountains, Mt. Taylor Ranger District. Photo Courtesy USFS.

Photo Description: A brown sign with beige lettering showing the name of the forest and the lake sits on an embankment overlooking a blue lake. In the backdrop, evergreens line the lakeshore.

The report synthesizes data collected from various sources, including field observations, hydrological measurements, and remote sensing technologies. By examining key indicators such as water quality, streamflow patterns, soil stability, and vegetation cover, this document evaluates the forest's capacity to regulate water flow, mitigate flood risks, and maintain aquatic habitats. Additionally, the report considers the impacts of environmental stressors such as climate change, land use practices, and natural disturbances like wildfires, which may influence watershed health.

Ultimately, this monitoring effort aims to inform decision-making processes, guide restoration initiatives, and ensure the long-term resilience of the Cibola National Forest's watersheds. Through comprehensive analysis and continued observation, and by answering the two questions listed below, we can better safeguard these vital ecosystems, ensuring that they continue to provide clean water, habitat, and other essential services for generations to come.

Watershed Question 1:

Are watersheds functioning properly? Are the indicators of properly functioning watersheds rated as good? Is soil quality being maintained or improved to satisfactory condition?

Watershed Question 2:

Are best management practices prescribed to mitigate potential effects to watershed condition? Are they being implemented? Are they effective in protecting watershed condition, including water quality?

Watershed Conditions Question(s) 1 & 2

Background Narrative:

The Cibola National Forest rated watersheds with more than 10% within National Forest System Lands using the Watershed Condition Framework (USDA FS, FS-977). This was done at the 12-digit hydrologic unit code (HUC) scale, also known as 6th code watersheds. These watersheds are 10,000 – 40,000 acres in size.

The watershed condition is based on 12 indicators that consider ecological, hydrological, and geomorphic functions. These 12 indicators are then divided into three different categories, which are then weighed as shown in diagram 1. The Watershed Condition Framework assigns a rating based on these indicators and places the watershed in three different classes: Functioning Properly (Class 1), Functioning at Risk (Class 2), and Impaired Function (Class 3).

Monitoring Results:

Table 3: HUC 12 watersheds that have had projects planned or implemented on from FY22-24.

HUC 12 Watershed	Watershed Condition	Activities	Activity Type	Activity Acres	Total Acres	Percentage of watershed
Agua Medio-Bluewater Creek (130202070201)	Functioning at Risk (Class 2)	Copperton RX 1-2	Fuels	1327	1333	5.6%
		Shush Kin Fen and Spring Fencing	Riparian	6		
Arroyo de Tajique (130500011102)	Functioning at Risk (Class 2)	Terrero Fuera 1-5	Vegetation Management	518	518	1.5%
Arroyo Seccion (130202050702)	Functioning Properly (Class 1)	Black Mesa Thinning	Vegetation Management	239	239	0.6%
Canon del Camino-Rio Puerco (130202040403)	Functioning Properly (Class 1)	Black Mesa Thinning	Vegetation Management	294	294	1%
Cuervo Canyon-Rio Grande (130202110503)	Functioning Properly (Class 1)	Corn Canyon RX 2a	Fuels	836	836	2.4%
Dead Indian Creek (111303010303)	Functioning Properly (Class 1)	Feral Hog Control Units 13-14	Invasive Species	13	13	<0.1%
Spring Creek Lake-Washita River (111303010206)	Functioning at Risk (Class 2)	Feral Hog Control Units 13-14	Invasive Species	536	536	1.3%

Durfee Canyon (130202080103)	Functioning Properly (Class 1)	Durfee Bolander 2B-1 Thinning	Vegetation Management	2	2	<0.1%
Guadalupe Canon-Rio Puerco (130202040401)	Functioning Properly (Class 1)	Black Mesa Thinning	Vegetation Management	60	60	0.2%
Headwaters Cottonwood Creek (130202070202)	Functioning at Risk (Class 2)	Pequeno 18, 19, 10, and 22 Thinning	Vegetation Management	257	257	0.7%
Lobo Creek (130202070305)	Functioning at Risk (Class 2)	Horace Mesa Thinning	Vegetation Management	55	55	0.2%
Mesteno Draw (130500011001)	Functioning Properly (Class 1)	Thunderbird RX	Fuels	135	135	0.5%
Milbourn Draw (130500011103)	Functioning Properly (Class 1)	Terrero 5	Vegetation Management	1	1	<0.1%
Milk Ranch Canyon (150200060103)	Functioning at Risk (Class 2)	D2 Campground Thinning	Fuels	173	173	0.9%
Nogal Canyon-Rio Grande (130202110502)	Functioning at Risk (Class 2)	Corn Canyon RX 2a	Fuels	507	507	2%
Ojo Redondo-Bluewater Creek (130202070205)	Functioning at Risk (Class 2)	Copperton RX 1-2	Fuels	526	526	3.1%
San Jose Arroyo-Rio Grande (130202110504)	Functioning at Risk (Class 2)	Corn Canyon RX 2a	Fuels	546	546	1.5%
South Wall Canyon (130600060102)	Functioning Properly (Class 1)	Corona Red Cloud	Vegetation Management	49	49	0.1%
Tafoya Canyon-Rio San Jose (130202070603)	Functioning Properly (Class 1)	D2 Horace Mesa Thinning	Vegetation Management	73	73	0.3%
Upper Arroyo de Manzano (130500011002)	Functioning Properly (Class 1)	Box Canyon Capilla	Vegetation Management	94	306	1.2%
		Chato Rx	Fuels	212		
Upper Hells Canyon Wash (130202030401)	Functioning Properly (Class 1)	Cedro Raven Thinning	Vegetation Management	10	161	0.6%
		David Canyon Rx Units 7 & 8	Fuels	151		

Upper Rio Nutria (150200040201)	Functioning at Risk (Class 2)	D2 Campground Thinning McQue 1-2 McGaffey 1-2 Thinning	Vegetation Management	1146	1146	2.7%
Upper Tijeras Arroyo (130202030201)	Functioning at Risk (Class 2)	Cedro Raven Thinning Cedro Las Tablas Mastication Cedro Peak Mastication Cedro Powerline Mastication	Vegetation Management	872	876	3.1%
		David Canyon Rx Units 7 & 8	Fuels	4		
Wolf Wells (130202080101)	Functioning Properly (Class 1)	Durfee Bolander 2B-1 Thinning	Vegetation Management	132	132	0.6%

Evaluation Criteria:



Figure 3: Bluewater Creek during the wintertime, Zuni Mountains, Mt. Taylor Ranger District. Photo Courtesy USFS.

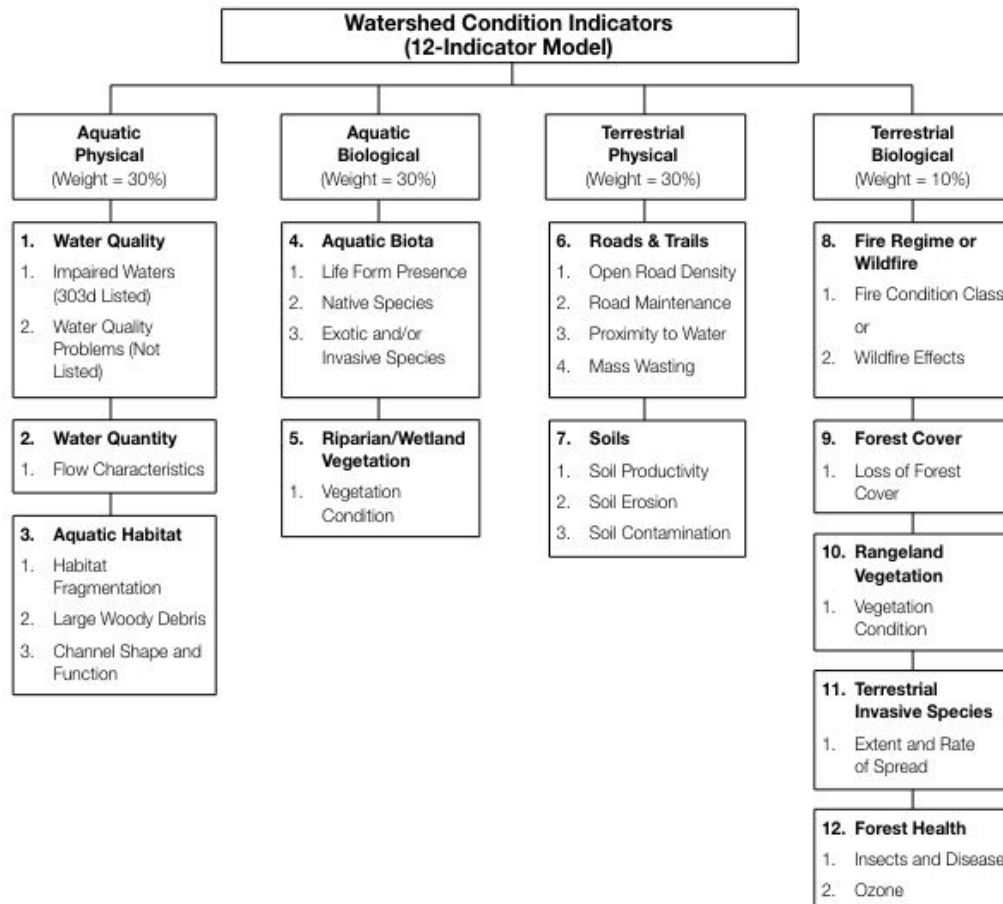
Photo Description: A waterfall in the backdrop with reddish brown stone walls on either side. Snow covers the rocks and fallen logs.

Vegetation management, riparian improvement, fuels projects, and invasive species projects have been implemented on approximately 8,774 acres across 24 watersheds on the Cibola National Forest. Of those projects, 3,802 acres were for vegetation management, 4,417 acres were for fuels, 549 acres were for invasive species treatment, and 6 acres were completed for riparian improvement. 11 watersheds have been rated as functioning at risk, while 13 have been rated as functioning properly. Table 4 lists the 11 watersheds that have been rated as functioning at risk, along with indicators that have been rated less than good. Water Quality, Terrestrial Invasive Species, and Forest Health have been rated as good across all 24 watersheds. Treatments that have been implemented and planned have the potential to change the watershed condition rating by changing indicators that do not have a good rating as shown in table 4.

In the Cibola National Forest, the ratings for these 6th code watersheds are as follows:

- 161 watersheds rated as ‘good’ meaning the watershed processes are functioning properly.
- 50 watersheds rated as ‘fair’ meaning the watershed is functioning at risk.
- 1 watershed rated as ‘poor’ meaning the watershed is not functioning properly.

Diagram 1. Watershed Condition Indicators



This rating scale is currently being revised and weights for each of these biological and physical indicators will be weighed evenly, which in turn may change ratings for some watersheds.

Watershed Improvement Projects:

Opportunities for watershed improvement are identified through an integrated approach. Wildlife, range, recreation, engineering, and vegetation management work together to identify and implement projects that will result in improvement to all resources, including soil and water. Vegetation management projects provide the opportunity to improve soil condition where woody material and/or ground cover are lacking. This activity also reduces the risk of high intensity wildfire by reducing the amount of fuel to be burned. Wildlife and range work with watershed resources to improve riparian and watershed conditions such as in the Shush Kin project. The watershed department works with engineering to improve soil condition by restoring gullies and improving overall ground conditions for stream flow.

Best Management Practices (BMPs):

The effectiveness and implementation of BMPs are monitored using the process described in the USDA Forest Service publication, National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide (2012, FS-890a). In addition, project monitoring occurs throughout the year to ensure BMPs are implemented and effective. Prior year monitoring from the previous Forest Plan highlighted the need to ensure that BMPs are monitored. BMP results from the last few years were summarized. While BMP implementation has improved from past years, this information showed the need to continue to ensure that BMPs are prescribed and implemented as described in NEPA documents. When implemented, BMPs were effective most of the time in limited impacts to water resource features.

Best management practices are being prescribed to mitigate potential effects to watershed condition by addressing the need to reduce potential negative impacts of forest activities. Overall, BMPs are being used to mitigate effects, especially for vegetation management and fire activities. This leads to benefits to watershed condition by maintaining or improving the 12 indicators that comprise watershed condition ratings.

Results:

Two priority watersheds were identified in the Forest Plan, Bluewater and Las Huertas. Two watershed improvement action plans (WRAP) are currently being developed for the Agua Media and Upper Tijeras Arroyo watersheds. Essential projects to be included in these WRAPs are being planned and scheduled such as fencing, road work, spring improvements, vegetating management, and erosion control. These essential projects are projects that are meant to lead to improved watershed condition by addressing aspects of the watershed that have a rating that is not good or satisfactory.

Status of Terrestrial and Aquatic Ecosystems

The Cibola National Forest encompasses a diverse range of terrestrial and aquatic ecosystems that play a crucial role in maintaining regional biodiversity and ecological balance. In this monitoring report a select set of ecological conditions is monitored for terrestrial, riparian, and aquatic ecosystems. The monitoring questions and indicators are selected to measure the effectiveness of the plan to maintain or restore ecological conditions for key ecosystem characteristics associated with composition, structure, function, and connectivity. All these questions designated in the forest plan duration are aiming to provide a comprehensive assessment of these ecosystems, focusing on their current health, trends, and any emerging issues that may impact their sustainability. Through detailed observations and analysis, this report seeks to highlight key findings related to habitat conditions, species populations, and environmental changes, thereby supporting informed management decisions and conservation efforts in future recommended alterations to existing plan components and monitoring strategies.



Figure 4: Bluewater Creek during the spring. Zuni Mountains, Mt. Taylor Ranger District. Photo Courtesy USFS.

Photo Description: A narrow creek meanders through a green meadow. Green shrubs are on either side of the meadow. A man stands next to a rock outcropping in the backdrop. Tall conifers can be seen in the distance.

Terrestrial & Aquatic Ecosystems Question 1:
Are management activities moving terrestrial habitat toward desired conditions?

Terrestrial & Aquatic Ecosystems Question 2:
Are riparian areas in proper functioning condition rated as satisfactory? Are management actions maintaining or improving riparian condition and contributing to proper functioning condition?

Terrestrial & Aquatic Ecosystems Question 3:
Are activities implemented to improve water resource features?

Terrestrial & Aquatic Ecosystems Question 4:
Are invasive species locations changing?

Terrestrial & Aquatic Ecosystems Question 1:

Are management activities moving terrestrial habitat toward desired conditions?

Background Narrative:

The question was designed to gauge whether management actions are working to achieve or maintain natural ecological conditions that support higher biodiversity and whether they are helping these habitats become resilient to naturally occurring disturbances.

Evaluation Criteria:

Indicator 1: Monitor seral state proportions and species compositions using TEUIs (Terrestrial Ecological Response Units).

Indicator 2: Acres of terrestrial habitat restored or enhanced.

Indicator 3: Number of water features maintained, improved, or installed for benefit of wildlife.

Monitoring Results:

No data was collected for the indicators because no treatments tiering to this BMER have been implemented to date. An estimated 80 – 90% of the Forest wildlife waters on each district are in functioning condition. No new projects have been installed that tier to the revised BMER. A database is currently in development to track these data more efficiently and generate reports.

Recommended Changes Based on Results:

TEUIs do not represent actual habitat and should not be used to monitor changes in Forest seral states and species composition. Recommend reevaluation of this indicator and suggest monitoring at the project scale in a consistent manner that would allow for collating data to scale analysis forest-wide.

Terrestrial & Aquatic Ecosystems Question 2:

Are riparian areas in proper functioning condition rated as satisfactory? Are management actions maintaining or improving riparian condition and contributing to proper functioning condition?

Background Narrative:

Watersheds are areas of land that drain to a single point. Watersheds collect, store, and discharge water while providing diverse sites and pathway for chemical reactions and provide habitat for diverse species. Watersheds support water resources features such as streams, springs, wetlands, acequias, riparian areas, and groundwater. Water resources on the Cibola provide many ecosystem services from which society derives enjoyment or benefit. Watersheds and riparian areas, and water from streams, springs, and seeps

provide supporting ecosystem services to society in that they contribute to nutrient cycling and primary production, and water is a catalyst in soil formation. Watersheds and riparian areas also provide regulating ecosystem services as they contribute to erosion control, flood regulation, and water purification.

Evaluation Criteria:

The rating scale is currently being revised and weights for each of these biological and physical indicators will be weighed evenly, which in turn may change ratings for some watersheds.

Two priority watersheds were identified in the Forest Plan, Bluewater and Las Huertas. Two watershed improvement action plans (WRAP) are currently being developed for the Agua Media and Upper Tijeras Arroyo watersheds. Essential projects to be included in these WRAPs are being planned and scheduled such as fencing, road work, spring improvements, vegetating management, and erosion control. These essential projects are projects that are meant to lead to improved watershed condition by addressing aspects of the watershed that have a rating that is not good or satisfactory.

Monitoring Results:

There are areas that show visual improvements when compared before restoration actions have been implemented, such as the Shush Kin Fen. Many watershed improvement projects have been planned and implemented, but the actual success of these several projects will not be known until the landscape has had time to recover, and when other inventory projects and assessments have been completed.

Table 4: HUC 12 watersheds of projects that are not rated as functioning properly, and their accompanying indicators that are rated other than good.

HUC 12 Name	Aquatic Biota	Riparian Vegetation	Water Quantity	Aquatic Habitat	Roads & Trails	Soil Condition	Fire Condition	Forest Cover	Rangeland Vegetation
Agua Medio-Bluewater Creek	Good	Fair	Good	Fair	Poor	Fair	Poor	Good	Fair
Arroyo de Tajiique	Good	Fair	Fair	Poor	Poor	Fair	Poor	Good	Fair
Headwaters Cottonwood Creek	Fair	Fair	Good	Fair	Poor	Fair	Poor	Good	Fair
Lobo Creek	Good	Fair	Fair	Fair	Poor	Fair	Poor	Good	Fair
Milk Ranch Canyon	Good	Fair	Good	Fair	Poor	Poor	Poor	Good	Fair
Nogal Canyon-Rio Grande	Good	Fair	Good	Fair	Poor	Fair	Poor	Good	Fair
Ojo Redondo-Bluewater Creek	Fair	Fair	Good	Poor	Poor	Fair	Poor	Fair	Fair
San Jose Arroyo-Rio Grande	Good	Fair	Good	Fair	Poor	Poor	Poor	Good	Fair
Spring Creek Lake-Washita River	Good	Fair	Good	Fair	Poor	Fair	Fair	Good	Good
Upper Rio Nutria	Fair	Fair	Fair	Poor	Poor	Fair	Poor	Good	Fair
Upper Tijeras Arroyo	Fair	Good	Good	Poor	Poor	Poor	Fair	Good	Fair

Terrestrial & Aquatic Ecosystems Question 3:

Are activities implemented to improve water resource features?

Background Narrative:

To improve riparian condition, the watershed department work collaboratively with other resources to identify riparian features for improvement. Riparian improvement projects are often selected when features in need of restoration are close to other projects or in cooperation with other program areas such as wildlife. For example, the NEPA for the Puerco and Cedro included several riparian improvement projects for implementation. In the Zuni Mountains, restoration of a Shush Kin fen involved several resources areas and partners.

Evaluation Criteria:

Spring Inventory and Assessment

Springs on the Cibola National Forest are a valuable, but limited resource. Springs provide water to an otherwise dry landscape. Currently, there are over 500 springs on the Cibola as identified using available GIS data and updated inventory information. Many of these springs are associated with stream channels, more than half of these springs have been developed for drinking water, wildlife, and livestock use. Many springs are seasonally dry, several have mostly dried up, due to reduced snowpack caused by climate change and other factors. The Cibola has added more money toward spring agreements for inventorying and improvement.

The Cibola National Forest has a cost share agreement with the Springs Stewardship Institute (SSI) to inventory and assess springs across the forest. An annual report was conducted in FY22 by the Cibola National Forest and the Springs Stewardship Institute (SSI). Prior to the field season of FY22, the Forest Hydrologist provided SSI with a list of 16 springs to be surveyed, which were all located in the Sandia Ranger District. A total of 8 springs were inventoried using the SSI Level 2 Springs Inventory Protocol, including the SSI Springs Ecosystem Assessment Protocol (SEAP), and the GDE Disturbance and Management Indicators. The level 2 springs inventorying involves rapid documentation of site geography and conditions, site geomorphology, soil particle size distribution, delineation of microhabitats, preparation of a sketch map, measurement of springs discharge and field water quality variables (including pH, conductivity, temperature, alkalinity, and dissolved oxygen concentration), a full floristic composition and structure analysis, and a zoological inventory including vertebrate and invertebrate fauna. The SEAP is used to provide managers with guidance priorities in relation to administrative needs. The remaining 8 springs were surveyed using the SSI Level 1 protocol, which includes georeferencing, photography, and a site description. A condition and risk assessment were provided through the level 2 inventory protocol and is discussed later in the report.

Table 5: Spring ecosystem assessment protocol (SEAP) category scores provided by inventory staff at eight Cibola National Forest Springs in 2022.

Ref. No.	Site Name	-----Condition-----					-----Risk-----			
		Aquifer & Ground-water Quality	Geomorphology	Habitat	Biota	Natural Resources Average	Freedom from Human Influence	Natural Resources Average	Freedom from Human Influence	
1	Cañoncito Spring	4.8	4.4	4.6	5.3	4.8	5.6	1.9	1.3	
2*	Ciénega Spring	3.2	2.2	3.6	3.3	3.1	3.9	3.0	3.1	
3	Embudo Spring	1.8	4.2	3.4	4.1	3.4	4.7	3.0	1.1	
4	Osha Spring	3.7	4.2	4.4	4.9	4.3	5.6	2.3	1.4	
5	Oso Spring	4.3	3.8	5.0	5.9	4.8	5.6	1.8	1.4	
6	Oso Spring Lower	2.8	4.2	4.2	4.7	4.0	5.4	1.8	1.4	
7*	Sulphur Spring	3.3	3.6	4.0	4.4	3.8	4.0	2.7	2.3	
8*	Tree Spring	3.7	3.4	4.0	4.6	3.9	4.7	2.2	2.1	
Mean Score for All Sites		3.5	3.8	4.2	4.7	4.0	4.9	2.3	1.8	
Min-Max Score for All Sites		1.8 - 4.8	2.2 - 4.4	3.4 - 5.0	3.3 - 5.9	3.1 - 4.8	3.9 - 5.6	1.8 - 3.0	1.1 - 3.1	
No. Springs with Impaired Condition (<3.5) or High Risk (>2.5; n=8)		4	2	1	1	2	0	3	1	

The SEAP assessment includes 42 variables which are grouped into 6 different categories. The survey crew assigns condition and risk scores for each variable using a 0 (low) to 6 (high) scale. For site condition, a score of 0 indicates extremely poor conditions while a score of 6 indicates pristine condition. For the risk assessment, a score of 0 indicates no risk whatsoever to the spring ecosystem and a score of 6 indicates high risk. In terms of assessment, condition scores below 3.5 indicate ecologically impaired conditions, and risk scores above 2.5 indicate elevated risks (Stevens et al. 2016a, Paffett et al. 2018).

Monitoring Results:

Water resources such as the Shush Kin Fen show visible improvement compared to before fen restoration activities have been implemented. Spring condition for a selection of springs located in the Sandia Ranger District were inventoried and their conditions were assessed by the SSI field crew. This assessment will guide further spring/riparian improvement work in the future.

Table 6: Management recommendations for eight Cibola National Forest springs inventoried by SSI field crews in 2022.

Ref. No.	Site Name	Management Recommendations
1	Cañoncito Spring	Remove several non-native Siberian elm saplings. Continue to monitor occasionally to determine flow variation. This is an excellent reference site.
2*	Ciénega Spring	Consult with the consortium that manages the well and encourage them to consider releasing some quantity of perennial flow, rather than maintaining an on-again, off-again anthropogenic discharge regime. Monitor avian life before and after such a management change, as bird life will likely respond quickly to the presence of perennial flow.
3	Embudo Spring	Monitor the site occasionally to determine discharge variability. In particular, monitor flow monthly following one or more wet and one or more dry winters. Develop a site history, as the spring may have historical significance to Albuquerque's history of water use. Flow variability may be influenced by the silted-in dam - could it have buried the spring?
4	Osha Spring	Monitor this spring for drying. It appears that the source is shifting downslope, which is a sign that the water table may be dropping. This is the only flowing spring in the vicinity and thus quite ecologically important. Also, compiling a historical analysis of this remote, developed spring could be interesting and could contribute to informed management.
5	Oso Spring	Monitor to determine flow perenniality; evaluate the possibility of rerouting the hiking trail, which crosses at the source.
6	Oso Spring Lower	If the site warrants management attention, remove decomposing infrastructure (concrete, pipe, etc.)
7*	Sulphur Spring	Determine whether the emerging groundwater is contaminated by an anthropogenic source; unusually high levels of algae in the springs outflow channel suggest this could be the case. If the water is natural, signage about the rarity of springs, and the threatened status of ciénegas in particular, might be worthy of consideration. Leakage below the downstream culvert may eventually cause road failure on the pull-in road.
8*	Tree Spring	Determine the historical significance of the site and the constructed limestone wall. Clean out the silted-in springbox and install wildlife escapement.

Recommendations:

Further assessment and inventorying across the Cibola National Forest are recommended to guide individual spring management.

Terrestrial and Aquatic Ecosystems Question 4:

Are invasive species locations changing?

Data Sources:

Primary database is Threatened, Endangered, Sensitive Plants – Invasive Species (TESP/IS) in the Natural Resources Manager (NRM) data base.

Evaluation Criteria:

Evaluation Criteria for the monitoring question is based on current invasive species occurrences and remeasurement of original inventories in subsequent years. Treatment of invasive species polygons tracks treatment methodology normally categorized under mechanical, or chemical treatment. Other treatment methods may include biological and cultural methods or reducing or eliminating invasives. For the purposes of this report, invasives are confined to plant species, however other types of invasives occur, and can potentially impact other native species. These include other pathogens, invertebrate, and vertebrate species.

Monitoring Results:

Inventory data on the mountain units of the Cibola is limited. The NRM corporate dataset only contains information for the Mount Taylor Ranger District, however, it is known that invasive plant species do occur on the Sandia, Magdalena, and Mountainair Ranger Districts. Data collection is limited and is constrained by funding. However, in 2024 there has been momentum in increased funding. In fiscal year 2024 the Forest Guild was able to secure a grant made available through the Infrastructure Investment and Jobs Act (IIJA). This funding in collaboration with the Forest will allow additional invasive species data to be collected on the Zuni Mountains Collaborative Forest Landscape Restoration Program (CFLRP). In addition, work has been initiated for a Section 18 review of the *Environmental Assessment for Integrated Pest Management of Noxious/Invasive Plants Cibola National Forest, Catron, Cibola, Colfax, Harding, Lincoln, McKinley, Mora, Sandoval, Sierra, Socorro, Torrance, Union and Valencia Counties in New Mexico; Cimarron County in Oklahoma; Dallam County in Texas*. This Assessment authorizes the use of Integrated Pest Management for the control of identified invasive species. The review is expected to evaluate current methodologies and expansion of identified invasive species, including native species to facilitate desired conditions as described in the Forest Plan.



Figure 5: Forest personnel monitoring invasive thistle species.

Photo description: A man standing in a field, wearing a grey shirt and blue pants, surrounded by brush and vegetation, with trees and rocks in the background.

As identified earlier baseline data for the mountain units is limited. However limited inventory data for the Mount Taylor Ranger District is available (table 7).

Table 7: Current inventory data for Mount Taylor Ranger District from TESP/IS data base.

INFESTATION_ID	INVENTORY_DATE	SPECIES_CODE	COMMON_NAME	SPECIES_CATEGORY	AREA_AC	GPS_LAT_DEC_DEG	GPS_LON_DEC_DEG
WINGATE0001_030302	7/22/2019 0:00	CANU4	nodding plumeless thistle	Plant	52.7559	35.3885415	-108.532523
WINGATE0001_030302	8/8/2016 0:00	CANU4	nodding plumeless thistle	Plant	231.2604	35.4192815	-108.545453
TURKEY_FARM2	4/26/2016 0:00	TARA	saltcedar	Plant	70.2475	35.23702	-107.701881
TURKEY_FARM	4/26/2016 0:00	ELAN	Russian olive	Plant	70.2475	35.23702	-107.701881
PREWITT6A_RUSSIAN_OLIVE	3/24/2015 0:00	ELAN	Russian olive	Plant	50.7476	35.4442895	-108.440787
POLECANYON0001_030302	8/25/2016 0:00	CANU4	nodding plumeless thistle	Plant	145.2406	35.203919	-108.013953
030302_ZUNI_CANU4_0001	8/3/2020 0:00	CANU4	nodding plumeless thistle	Plant	78.4288	35.2620365	-108.157896
Totals					698.9283		

Recommended Changes Based on Results:

Invasive species populations will continue to grow and change with changing environmental conditions. Inventory, treatment and monitoring need to be prioritized using a collaborative approach in identifying those populations of invasives that may cause the greatest impact on ecosystems. The use of Integrated Pest Management and the use of early detection rapid response (EDRR) approaches for invasive species treatment need to be more fully employed.

Status of Select Focal Species

Focal species are not selected to make inferences about other species. Focal species are selected because they are believed to be responsive to ecological conditions in a way that can inform future plan decisions. Forest Service Handbook direction (1909.12 chapter 30, section 32.13c) for focal species further specifies every plan monitoring program must identify one or more focal species and one or more monitoring questions and associated indicators addressing the status of the focal species.

The purpose for monitoring the status of focal species over time is to provide insight into the integrity of ecological systems on which focal species depend, the effects of management on those ecological conditions, the overall effectiveness of the plan components to provide for ecological integrity and maintain or restore ecological condition, and to determine progress towards achieving desired conditions and objectives for the plan area. It is not expected that a focal species be selected for every element of ecological conditions.

The two focal species recommended in the 2022 Cibola National Forest Land Management Plan are the Ash-throated Flycatcher (*Myiarchus cinerascens*) and the Grace's Warbler (*Setophaga graciae*).

Ash-throated Flycatcher (*Myiarchus cinerascens*):

The ash-throated flycatcher is a widespread and relatively common inhabitant of mixed riparian hardwood and pinyon-juniper habitats (Lawrence 1851). They breed throughout the Western U.S. and the Mexican plateau (Lanyon 1961), in arid and semiarid scrub and open woodland, as well as riparian woodland in arid and semiarid regions. Pinyon pine-juniper woodland and riparian associations are among their preferred habitat types.

This species is an excellent focal species for monitoring pinyon-juniper habitat types on the Cibola National Forest. Ash-throated flycatchers are conspicuous and easily observed on surveys. Treatments on the landscape to meet desired conditions within riparian and pinyon-juniper habitats should have a positive influence on providing adequate habitat for this species.

Grace's Warbler (*Setophaga graciae*):

Grace's warbler is well associated with pine and pine-oak forests with park-like characteristics and patches of mature trees (Stacier and Guzy 2002). In New Mexico, it is described as inhabiting mesa tops and canyon bottoms with ponderosa pine (Travis 1992, Cornell Lab of Ornithology 2019) and may prefer areas with a Gambel oak understory (Levad 1998). This species uses tall ponderosa pine for both breeding and foraging; they nest in larger ponderosa trees averaging 15.1 meters tall and will often forage for insects in the upper canopy.

It is expected that management actions meeting the desired conditions outlined in this plan would have a positive effect on Grace's warbler. Detecting this species within treatment units would indicate habitat conditions on the landscape are moving towards the stated desired conditions.

What is the area of forest occupied by the ash-throated flycatcher? Are management actions maintaining or improving habitat for ash-throated flycatcher

Status of Select Focal Species Question 2:

What is the area of Cibola occupied by Grace's warbler? Are management actions maintaining or improving habitat for the Grace's warbler?

Question 1:

What is the area of forest occupied by the ash-throated flycatcher? Are management actions maintaining or improving habitat for ash-throated flycatcher?



Photo Description: A bird with pale lemon belly feathers and cinnamon-colored wings and tail feathers perches on a tree branch, the background is blurry, another flycatcher can be seen in the background.

Figure 6: Ash-throated Flycatcher (Myiarchus cinerascens) perching. Photo Courtesy Matthew Pendleton/Cornell Lab Macaulay Library 2015.

Background Narrative:

The question was designed to identify whether forest management actions (including commercial timber harvest) in Pinyon-Juniper and Juniper habitat types are moving these systems towards conditions that are uneven-aged and open in appearance, possess sufficient heterogeneity and old growth characteristics to support biodiversity, and are resilient to natural disturbances.

The Ash-throated Flycatcher (ATFL) is widespread and common in Pinyon-Juniper (PJ) woodland and riparian hardwood habitat. It nests in older trees with existing cavities and is dependent on the presence of primary cavity nesters. Foraging habitat is open, arid or semi-arid shrubland, and grassland. Its nesting habitat has been altered by historic fire suppression. It is naturally maintained by low- to moderate-severity fire but negatively impacted by uncharacteristically large or high-severity wildfire and excessive wood removal. Restoration of natural processes like fire regime, restoration of habitat characteristics (to Desired Conditions), and timber harvest that promotes habitat restoration should benefit ATFL. Therefore, relative proportions of occupied nesting areas should remain stable or increase in project areas.

Evaluation Criteria:

The method for evaluating indicator 1 (nesting territories) would be estimating the proportion of occupied nesting territories on an annual basis using point count surveys for the ATFL designed to approximate the U.S. Geological Survey (USGS) protocol for Breeding Bird Surveys (e.g. transects of points spaced 0.5 miles apart, surveys conducted during May and June, surveys starting 30 minutes before sunrise and ending before 1200). A threshold is needed to determine acceptable levels of occupied nesting. However, this threshold requires development.

The method for evaluating indicator 2 (habitat acreage) would include estimating the proportion of habitat suitable for the ATFL by collecting stand exam data at defined intervals for samples across the Forest. A threshold is needed to determine an acceptable proportion of suitable ATFL habitat.

Monitoring Results:

For indicator 1, we were unable to obtain data. This indicator is not defined in any historic or current scientific literature. Spatial and scientific definitions of territories for the ATFL are undescribed. Additionally, it is not feasible to sample this across the entire forest unit due to funds and labor needed.

For indicator 2, we were unable to obtain data. It is not feasible to sample for suitable habitat across the entire forest due to funds and labor needed. No treatments have been implemented that tier to this BMER as of the drafting of this report. It would be more appropriate to evaluate this indicator at the project scale.

Recommended Changes Based on Results:

Indicator 1. Nesting territories for ATFL are not defined and should not be used as an indicator because they cannot feasibly be measured. Recommend using presence/absence or occupancy data instead. Breeding Bird point count surveys in strategic places may be more effective. Monitoring should be conducted consistently at the project/individual treatment scale rather than Forest-wide.

Indicator 2. TEUIs do not represent actual habitat and should not be used to monitor the acreage or proportion of forest habitat that is suitable for ATFL. Recommend estimating suitable habitat for ATFL on a project-by-project basis to evaluate whether treatments are leading toward desired conditions for the ATFL. A standard definition of ATFL habitat is needed. Vegetation transects (e.g., line-point intercept) may be more effective than stand exams, measuring for habitat characteristics that are important to ATFL. Recommend monitoring pre- and post-treatment.



Question 2:

What is the area of Cibola occupied by Grace's warbler? Are management actions maintaining or improving habitat for the Grace's warbler?

Photo Description: A small bird with bright yellow chest and cheek feathers, a shiny black beak, and light grey back and wing feathers perches on a branch.

Figure 7. A Grace's warbler (Setophaga graciae) perches on a branch. Photo Courtesy Carlos Echeverria/Cornell Lab Macaulay Library 2020.

Background Narrative:

The question was designed to identify whether forest management actions (including commercial timber harvest) in Ponderosa pine forest are moving this system towards conditions that are variable in age, group shape, and group shaping, and that possess sufficient spacing and mid- to old-growth to support biodiversity and be resilient to natural disturbances.

Grace's warbler (GRWA) uses dry mixed-conifer and ponderosa pine habitat types and requires larger ponderosa pine trees (averaging 15.1 m height) for nesting and may also prefer oak understory.

The species generally responds well to low-severity fire and thinning of small-diameter trees. It requires overstory and open understory typically maintained by natural processes. However, historical treatments (e.g., clear cuts, overstory removal) have negatively impacted GRWA populations (habitat loss and brood parasitism).

Restoration of natural processes and structure to Ponderosa pine and mixed-conifer forests that meet Desired Conditions should result in increased area of suitable GRWA habitat over time. If occupation of GRWA habitat decreases post-treatment, management actions are not "maintaining or improving" habitat for the species and should be re-evaluated.

Evaluation Criteria:

The method for evaluating indicator 1 would be estimating the proportion of occupied nesting territories on an annual basis using point count surveys for the GRWA designed to approximate the U.S. Geological Survey (USGS) protocol for Breeding Bird Surveys (e.g., transects of points spaced 0.5 miles apart, surveys conducted during May and June, surveys starting 30 minutes before sunrise and ending before 1200). A threshold is needed to determine acceptable levels of occupied nesting.

The method for evaluating indicator 2 (habitat acreage) would include estimating the proportion of habitat suitable for the GRWA by collecting stand exam data at defined intervals for samples across the Forest. A threshold would be needed to determine an acceptable proportion of suitable GRWA habitat.

Monitoring Results:

For indicator 1, we were unable to obtain data. Additionally, it is not feasible to sample across the entire forest unit due to funds and labor needed.

For indicator 2, we were unable to obtain data. It is not feasible to sample for suitable habitat across the entire forest due to funds and labor needed. No treatments have been implemented that tier to this BMER as of the drafting of this report. It would be more appropriate to evaluate this indicator at the project scale.

Recommended Changes Based on Results:

Indicator 1. Recommend developing a sampling scheme that can be monitored at defined intervals to gain presence/absence or occupancy data. Breeding Bird point count surveys in strategic places may be effective. Consider monitoring at the project/individual treatment scale rather than Forest-wide using a consistent method that can allow analysis to be scalable.

Indicator 2. Recommend defining GRWA habitat based on best available science and determine a method for sampling habitat across the forest and/or project areas. Recommend estimating suitable habitat for GRWA on a project-by-project basis to evaluate whether treatments are leading toward desired conditions for the GRWA. A standard definition of GRWA habitat is needed. Vegetation transects (e.g., line-point intercept) may be more effective than stand exams, monitoring both biotic and abiotic habitat characteristics that are important to GRWA. Recommend monitoring pre- and post-treatment.

Ecological Conditions for At Risk Species and Progress towards Meeting Desired Conditions, Objectives, and other Plan Components

For at-risk species, a select set of ecological conditions, including habitat, is monitored. The selected ecological conditions are necessary to provide for diversity of plant and animal communities and 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 identified for the Cibola National Forest. The select set of ecological conditions monitored for at-risk species may include characteristics at both the ecosystem and species-specific levels of terrestrial, riparian, or aquatic ecosystems. All of this and more are progress toward meeting the desired conditions, objectives, or other plan components that do not fall under one of the other nine required items included in the monitoring program. Specifically, the plan monitoring program must contain one or more questions and associated indicators addressing the plan's multiple-use management in the plan area, or progress toward meeting the desired conditions and objectives. The monitoring questions for the two plan components in this section are the same and thus have been combined into one section as the other plan components and related monitoring questions under the desired conditions, objectives, and other plan components as found on page 180 of 2022 Cibola National Forest Land Management Plan cannot be answered in this 2024 Biannual Monitoring Evaluation Report due to reporting frequency being outside the stated time parameters.



Figure 8: Pile burns in progress during winter on the Mt. Taylor Ranger District. Photo Courtesy USFS.

Photo Description: Piles of cut logs and branches on fire amongst pine trees. Snow covers the ground around the piles of burning woody material. Several more piles can be seen in the backdrop on fire.

Monitoring Plan Components:

FW-DC-TRSP-07: Natural processes occur within the vegetative communities that enhance species richness and diversity. Terrestrial ecosystems are resilient to disturbance and tolerate the effects of, and therefore benefit from, wildland fire in a near natural fire regime as well as other naturally occurring disturbances.

FW-DC-VEG-01: Vegetation structure is in low departure from reference conditions as described in the Cibola assessment (USDA Forest Service 2015a).53

Monitoring Question:

Is vegetation structure meeting or approaching desired conditions?

Background Narrative:

The Cibola National Forest hosts a myriad of diverse ecosystems that provide niches for a range of species, from the miniscule Alamosa Spring Snail to the elusive Mexican Spotted Owl. All species that are at risk have ecological conditions that are required to have a successful reproducing population. The most direct indicator to determine that these conditions are being met is to look at the respective habitats that network the Cibola's forests, mountains, and grasslands. These environs host a rich biodiversity that is constantly competing with at risk species for the basic necessities of life. The Cibola contains 5 federally endangered species, 4 threatened species, and 20 species of conservation concern. Resource management practices outlined in the Land Management Plan for the Cibola National Forest aim to either progress or maintain suitable habitat conditions for wildlife within associated vegetation communities. The Cibola's extensive fire program and prescription treatments to the forest are the principal methodology in maintaining these paramount ecosystems.

Data Sources:

In order to answer the above question in relation to the overall forest plan component FW-DC-TRSP-07 the two main data sources utilized at this point are Forest Service Activity Tracking System (FACTS) and Fuels Treatment Effectiveness Monitoring (FTEM), in consultation with fuels and timber programs to determine whether or not the Cibola is within compliance with the desired condition parameters.

Evaluation Criteria:



Figure 9: An old fire break now a meadow visible from in the Manzano Mountains, Mountainair Ranger District, Photo Courtesy USFS.

Photo Description: A field of golden-brown grass with lines of green conifers and gold-colored aspens on either side. Blue sky with white patchy clouds. Rolling mountains in the backdrop.

Two evaluation criteria were examined in the biennial monitoring report. First, comparing FACTS for annual reporting during this time was compared to updated forest plan annual target for treating acres. FACTS is an accomplishment-based reporting database utilized by the agency to track projects. For this specific request Fuels data using Key point 3 (primary fuels) and Key point 6 (secondary fuels) that was accomplished and completed during FY 2022, 2023 and 2024 for the Mountain Districts (Mt. Taylor, Magdalena, Mountainair, and Sandia) were pulled. Note some items may have been completed prior to the final signatures of the completed Forest Service Plan in FY 2022 but overall, the data should roughly work for the analysis period.

Additional consultation occurred with the Forest Silviculturist, Shawn Martin, and timber acres accomplished for FY 2022 and FY 2023 were included though can overlap with some of the Key point 6

acres reported for fuels. This was done to capture both timber and fuels components when referencing vegetation structure.

These total accomplishments were then taken and compared to updated targets within the Cibola Forest Plan signed in 2022, thus only the mountain district acres were accounted for since the two Grassland units have a separate plan.

Second, examining the results at the same time from the FTEM system in order to determine how effective those treatments were when wildfire was encountered. Note: often the treatments predated the forest plan, something important to consider when examining the results in future monitoring reports.

Monitoring Results:

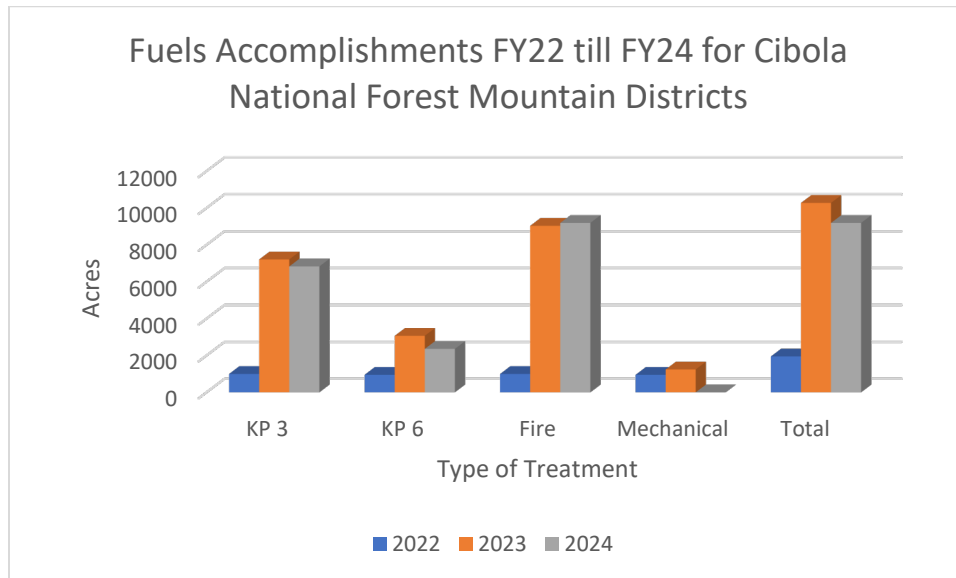
In total for fuels accomplishment for the Mountain Districts from 2022 to 2024 were roughly 21,418 acres (Table 8) and timber total were roughly 5,451 acres for FY22 till FY23. Below are a graph and table further depicting the trends.

Table 8: Fuels accomplishments for fiscal years 2022-2024 for the Mountain Districts of the Cibola National Forest.

YEAR	KEYPOINT 3 ACRES	KEYPOINT 6 ACRES	FIRE ACRES	MECHANICAL ACRES	TOTAL ACRES	TIMBER ACRES
FY 2022	999	952	999	952	1,951	2,387
FY 2023	7,210	3,066	9,034	1,242	10,276	3,064
FY 2024	6,833	2,358	9,191	0	9,190.6	N/A

These total accomplishments were then taken and compared to updated targets within the Cibola Forest Plan (which is prescribed burn target of 8,000 to 13,000 acres annually). Based off those numbers it does appear for both 2023 and 2024 the forest met that threshold and can be considered successful in moving vegetation structure towards desired conditions. 2022 does not appear to be the case, it should be noted there was a national prescribed fire pause due to Calf Canyon and Hermit’s Peak prescribed burns. This created a pause across the Nation for using prescribed burning during that year and could help account for not being able to meet annual prescribed burn acres target in the plan.

Table 9. Fuels accomplishments for fiscal years 2022 till 2024 for the Mountain Districts of Cibola National Forest breakdown based on treatment type.



Overall, considering two out of the three years the annual acres totals were met, this can be considered successful, to changing vegetation structure in a beneficial condition. From the mechanical standpoint, all thinning and fuel reduction treatments have the overarching goal of moving toward more uneven-aged conditions and reducing crown fire potential. Regardless of whether an uneven-aged silvicultural system was utilized (individual tree or group selection), the resulting conditions are a more open canopy, that features larger, older trees with openings created that will encourage natural regeneration of desired early seral species, especially when followed up with low-intensity prescribed fire. All these post treatment conditions result in moving toward desired structural conditions.

Fuels Treatment Effectiveness Monitoring (FTEM) examines overlays of fire starts with previously reported FACTS spatial data. Once interaction occurs several required questions are answered and entered FTEM portion of IFTDSS. This dataset was pulled and sorted for FY 2022 till 2024 and was further examined to determine how successful those treatments were at decreasing fire behavior of those incidents. Only 13 incidents have occurred on the Mountain districts, and 3 of those were determined to have an impact on the actual fire. In this case it should be noted human starts that occur within campfire rings were also reported within FTEM, if we remove those leaves only 6 incidents of which half were showed to be effective. Essentially 50% of incidents that occurred within previously treated projects were shown to allow for more direct approach with wildfire as well as slowed the rate of spread making it easier to contain and control the fires.



*Figure 10: A Forest Service employee uses a tool to gather pinecones from young Ponderosa Pines (*Pinus ponderosa*) in the Magdalena Ranger District. Photo Courtesy USFS.*

Photo Description: A man in a brown shirt, blue jeans, and yellow hard hat uses a yellow pole to collect pinecones from a young pine tree. On the ground is rope, backpacks and gloves.

Disclaimer: Initially LANDFIRE data was indicated as the required methodology by the forest plan to try and determine if the vegetation structure is meeting or approaching desired conditions, this may have been thought to be the best available option at the time. However, LANDFIRE data is problematic for multiple reasons when applying to monitoring:

- LANDFIRE data is used for fire modeling which is different than monitoring and should not be interchanged for one another. In simple terms Monitoring often requires extensive protocols on the ground to determine the exact measured parameters being affected. Whereas fire modeling relies on often broad scale datasets that must be further calibrated back from an existing incident to help determine what fire behavior would be. This type of modeling often relies on substantial edits to items such as LANDFIRE.
- LANDFIRE data is only updated periodically and not annually, for example the latest iteration is LANDFIRE 2022. This data would not capture any of the treatments within the two-year period

that this analysis would be in for the forest plan, requiring substantial edits and knowledge across the forest to help determine the appropriate corrections to make.

- LANDFIRE is a modeling system but is not a simple easy-to-use tool, often requiring additional training and courses to understand how to make these edits.
- There are also multiple assumptions built into LANDFIRE data sets such as uniform fuel type within the pixel, limited suppression, etc. and the person conducting the model must understand how to not only model fire behavior but how to change even the existing LANDFIRE data in a new database. This makes the results under extreme conditions, thus making it challenging to determine how effective the previous year's fuels treatments may be on the landscape.
- Essentially this form of modeling is for fire behavior and likely will not be effective as it comes to actual vegetation structure on the ground based on environmental conditions posed in the model as well does not function as the same as typical monitoring that occurs to showcase the difference of fire on the landscape.

FACTS and FTEM databases/systems don't have the same problematic issues nor require the extensive edits that LANDFIRE does, and actual data could be used for monitoring. Would encourage using both FACTS and FTEM rather than current LANDFIRE.

Recommended Changes Based on Results:

We will not utilize LANDFIRE data as it is not ideal for monitoring but rather for fire behavior modeling. It would require substantial edits but instead we will utilize other sources of data to help determine how successful treatments are including how FACTS reporting is aligning with treatment acres within the forest plan and FTEM.

Productivity of the Land

This monitoring requirement comes from the National Forest management act requirement for research regarding the effects of timber management systems on the productivity of the land, and that such research is based on continuous monitoring and assessment in the field. Monitoring is focused on key ecosystem characteristics related to soils and soil productivity.

Productivity of the Land Questions:

Are soils in satisfactory condition? Are management actions maintaining or improving vegetative ground cover and contributing to improved soil condition?

Background Narrative: The soils for the Cibola National Forest have been last assessed in 2007 using the Terrestrial Ecosystem Inventory (TEUI). Soil is the unconsolidated mineral and organic material on the immediate surface of the Earth that serves as a natural medium for the growth of land plants. As such, soil is the basis of the terrestrial ecosystem. Soils also provide habitat for many organisms, store carbon, and act as a filtration and storage system for water. Without soil, there are no plants. Soils have unique physical, chemical, and biological properties important to their use. The location and kind of soil is determined by soil-forming factors such as parent material, climate (past and present), living organisms, topography, and time. The approach taken for the management of soil is assessed by the extent to which soil condition is being maintained. Soil condition practices evaluate and monitor changes in the soil properties to maintain a satisfactory soil condition.

Data Sources: Terrestrial Ecosystem Unit Inventories (TEUI)

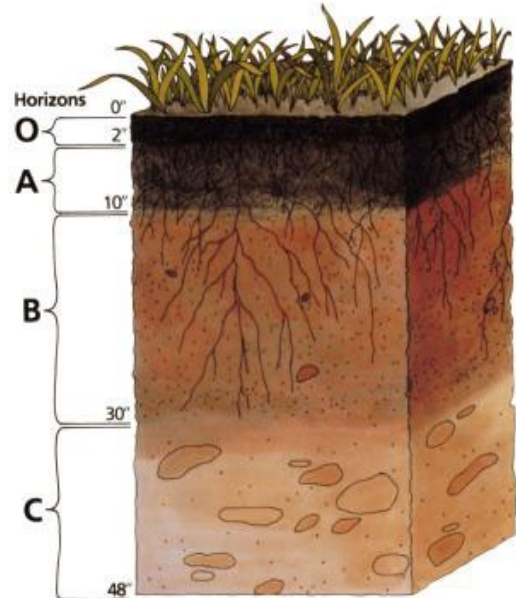
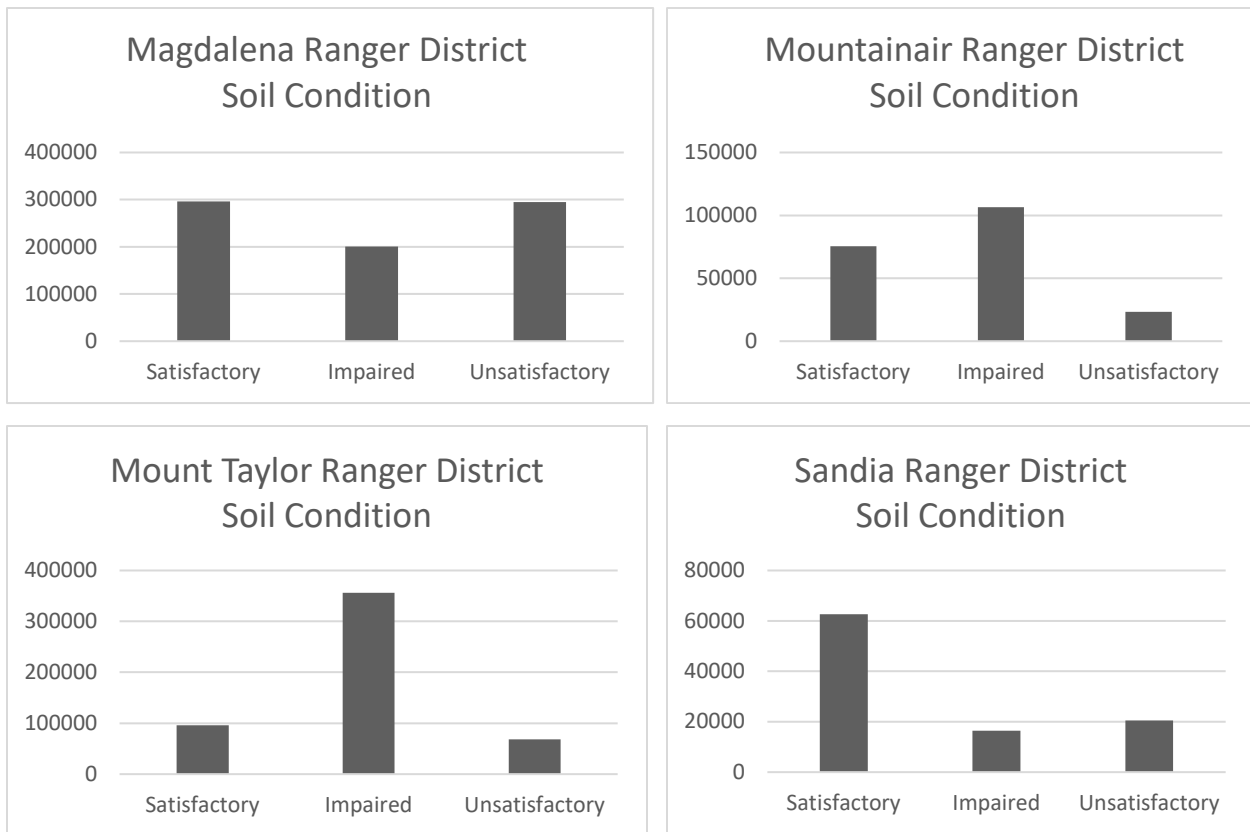


Diagram 2: The above diagram shows a typical soil horizon found in many of our forests nationwide. The different layers are different soil types and grain sizes. Diagram Courtesy USDA.

Figures 10-13: Display of most recent soil data in acres and the overall quality of the soil condition.



Soil condition is assessed using the Terrestrial Ecosystem Inventory (TEUI). Soil Condition ratings are based on four primary and interrelated soil functions: biological, climate regulation, stability, and hydrologic. Condition ratings are categorized into three different groups: Satisfactory, impaired, and unsatisfactory.

Definitions for each of these condition ratings are as follows:

Satisfactory: Indicators signify that soil function is being sustained and the soil is functioning properly and normally. The ability of the soil to maintain resource values sustain outputs is high.

Impaired: Indicators signify a reduction of soil function. The ability of the soil to function properly and normally has been reduced and/or there exists an increased vulnerability to degradation. An impaired category should indicate to land managers that there is a need to further investigate the ecosystem to determine the cause and degree of decline in soil functions. Changes in land management practices or other preventative actions may be appropriate.

Unsatisfactory: Indicators signify that loss of soil function has occurred. Degradation of vital soil functions results in the inability of the soil to maintain resource values, sustain outputs or recover from impacts. Soils rated in the unsatisfactory category are candidates for improved management practices or restoration designed to recover soil functions.

Monitoring Results:

All management actions have the potential to improve soil condition ratings if best management practices are implemented. Best management practices are being prescribed and implemented for each project to mitigate adverse impacts to soil health. BMP monitoring ensures these practices occur and are effective.

The soil condition is satisfactory when soil functions are sustained and operating properly as defined by current Forest Service protocols. Vegetation contributes to soil condition, nutrient cycling, and hydrologic regimes at natural levels. Downed woody material occurs at levels sufficient to support soil productivity through nutrient cycling. More efforts are needed to capture data and provide more information on soils free from pollutants that could alter ecosystem integrity or affect public health. Current soil condition data has been retrieved from the Terrestrial Ecosystem Inventory (TEUI) and serves as a start to capture a trend in future monitoring reports.

Recommended Changes Based on Results:

Assessment of soil condition has not been assessed in more than 5 years due to limited personnel. It is recommended that assessments be conducted soon, and as close as possible to the 5-year time frame as schedules permit rather than on an annual basis. Rather than an annual to 5-year reporting frequency a 10-year monitoring period is recommended for best monitoring results.

Social, Economic and Cultural Sustainability



Figure 11: Forest Service employees and Tribal Partners participating in field work together at La Jara Mesa. Mt. Taylor Ranger District, Photo Courtesy USFS.

Photo Description: Twelve people pose in front of a white pickup truck parked on brown grass with dark green evergreen trees in the backdrop.

Social, economic, and cultural sustainability within the Cibola National Forest is a fundamental part of the operations and relationships between the forest and the communities surrounding it. Socially, the report examines community engagement, public access, and the effect of forest management on local well-being. However, due to gaps in coverage and skewed data starting at the end of the Covid-19 Pandemic this variable of the plan component cannot be covered. Economically, this section assesses the balance between forest product use, resource extraction, and economic benefits related to livestock. The report evaluates efforts to protect indigenous heritage sites and traditional practices while also providing these Tribes/Pueblos, Land Grants/Acequias, and Central NM Historic

Communities with access to their traditional sites on forest land. By integrating data from surveys, economic reports, and cultural assessments, this section will weave together an in-depth look at the intricate effect that the Cibola National Forest has on the communities and economy in the regions in which it is present. It provides a comprehensive overview of current sustainability practices and identifies areas for improvement, offering recommendations for enhancing overall sustainability in the forest management framework.

Social, Economic and Cultural Sustainability Question 1:

To what extent is the Cibola meeting land management plan objectives and moving towards desired conditions in providing forest products for personal use and demands of local timber industry?

Social, Economic and Cultural Sustainability Question 2:

Is the Cibola providing resources important for cultural and traditional needs and for subsistence and economic support to tribal communities?

Social, Economic and Cultural Sustainability Question 3:

Is the Cibola providing resources important for subsistence and economic support to rural historic communities?

Social, Economic and Cultural Sustainability Question 4:

Is the Cibola moving toward desired conditions by providing grazing opportunities in support of our local economies?

Question 1:

To what extent is the Cibola meeting land management plan objectives and moving towards desired conditions in providing forest products for personal use and demands of local timber industry?

Background Narrative:

The Cibola National Forest provides forest products in several forms – timber sales (industry), commercial fuelwood permits (industry), personal use fuelwood permits, and administrative & tribal free use. In Fiscal Year 2022 and 2023, the Cibola sold 19,988 CCF and 18,490 CCF of timber volume; respectively. A breakdown by District is provided in the tables below.

Table 14: Timber Volume Sold by Ranger District on the Cibola National Forest in Fiscal Year 2022.

Timber Volume Sold - Fiscal Year 2022						
	Forest Total	Mount Taylor Ranger District	Magdalena Ranger District	Mountainair Ranger District	Sandia Ranger District	Kiowa and Rita Blanca NG
CCF	19,988	15,621	3,040	1,278	32	17
MBF	11,124	8,376	1,924	801	14	9

Table 15: Timber Volume Sold by Ranger District on the Cibola National Forest in Fiscal Year 2023.

Timber Volume Sold - Fiscal Year 2023						
	Forest Total	Mount Taylor Ranger District	Magdalena Ranger District	Mountainair Ranger District	Sandia Ranger District	Kiowa and Rita Blanca NG
CCF	18,490	13,721	3,643	1,030	21	74
MBF	10,817	7,819	2,306	644	12	37

Most of the timber volume sold originates from the Mount Taylor Ranger District, specifically through restoration efforts on the Zuni Mountain Collaborative Forest Landscape Restoration Project (CFLRP).

Data Sources: PTSAR Report from NRM Database

Evaluation Criteria:

Timber volume sold on National Forest Units is tracked in the Natural Resources Manager (NRM) database at the time permits or sales are sold. Thus, permit sales only reflect the volume *sold* to a member of the public rather than the volume removed from the National Forest. For example, an individual may purchase a permit for 10 cords of material but only cut 5. There is not an efficient way to track actual volume removed. In the case of timber sales, volume is tracked more closely as these sales are of a greater monetary value and the Forest Service is working with a single purchaser rather than the public more broadly.

Monitoring Results:

Because this is the first Biennial Monitoring Evaluation Report, monitoring of trends in sales is difficult to evaluate. In 2023, there was a small decrease in total volume (1,498 CCF). As time progresses, future reports will explore trends in sales.

Question 2:

Is the Cibola providing resources important for cultural and traditional needs and for subsistence and economic support to tribal communities?

Background Narrative:

The Cibola National Forest (Cibola) understands that it is important for tribal communities to access forest products for their traditional and cultural purposes. Current Forest Service policy directs National Forests to “assist tribal members in securing ceremonial and medicinal plants, (FSM 1563.03)”. This policy is pursuant to the Food, Conservation, and Energy Act of 2008, Sec. 8105, Forest Products for Traditional and Cultural Purposes, Code of Federal Regulations 36 CFR Part 223:15. As such, the Cibola allows traditional use by tribal communities through free use permit(s). This policy is reviewed every five years, or sooner unless national policies or regulations change.

The objectives of this policy are:

1. To provide simple, clear and consistent policy on American Indian traditional use of the Forest resources.
2. To accommodate traditional use of the Forest by American Indians.
3. To prevent resource damage and ensure that collection of forest products does not result in undesirable impacts to natural and cultural resources.
4. To ensure the transport of forest products complies with State law and regulation.

Products that are collected under these free use permits must remain for traditional and cultural use only and not for commercial purpose. Collection items include ceremonial firewood, timber products, and all other forest products. Ceremonial firewood, including ponderosa pine, pinyon pine, juniper, and oak will be provided at no charge to Tribes. Timber products other than firewood, including whole trees, logs, posts, poles, saplings, and other special timber products such as vigas and latillas for the construction of structures to be used for a ceremony, or kiva construction, will be provided to Tribes or Navajo Chapters at no charge. Both ceremonial firewood and timber products must comply with conditions written in the authorization letter before allowed for take at no charge. Products covered under other forest products include plants, wildflowers, mushrooms, moss, nuts, seeds, bark, berries, boughs, branches, cones, grasses, seeds, tree sap, and sand and clay (pigments).

Data Sources: Authorization letters, Free Use Permits

Evaluation Criteria:*Authorization Letters*

Authorization letters are provided to tribal communities that request forest products. Letters are issued on an as-needed basis and are not considered to be an annual requirement for tribes to renew. They serve

as a baseline for understanding which communities submitted requests. Furthermore, requests demonstrate that there is use of the process to provide traditional use of the forest.

Permits

Ceremonial Use permits are tracked by the Cibola through our corporate Forest Service permit database (TIM). Products are sold (free) to tribal members / communities via different 'product plans' which allow the Cibola to help provide specifications on forest products (size, quantity) as well as provide resource-based permit requirements (i.e., protection measures for natural resources, cultural resources, etc.). Since ceremonial use is a type of more general 'free use', the Cibola does not track on a permit-by-permit level how many permits are provided to each tribal community.

Partnerships and Projects

In alignment with the Forest Service motto of "Caring for the Land and Serving People", this monitoring question weighs heavily on how the Cibola provides a service to its diverse publics. The Cibola is actively engaged in several projects that directly support traditional needs for subsistence. Since 2020, the Cibola has been a routine member in the Northern New Mexico Fuelwood Working group. A group of Forest Service, State, Tribal, and NGOs focused on providing access to firewood for tribal and traditional communities.

Monitoring Results:

Authorization Letters

Authorization letters for the collection of ceremonial use products are provided on an ad hoc basis. In 2022, the following letters were issued: Cochiti Pueblo, Santa Ana Pueblo, Santo Domingo Pueblo, Zia Pueblo, and Zuni Pueblo. In 2023, letters were issued to Isleta and Jemez Pueblos.

Permits

The permit administration approach by the Cibola has been more service and inclusion-based; recognizing the immense need for sovereign tribal nations to access traditional and sacred lands now administered by the US Department of Agriculture. Therefore, adding extra processes to track and monitor tribal use may be burdensome and restrictive to tribal members' right to collect products for ceremonial uses.

Partnerships and Projects

In Fiscal Year 2023, the Cibola National Forest entered into an agreement with McKinley County Soil and Water Conservation District for the Black Mesa Wildlife Improvement Project Area. This project provided funding to remove piñon-juniper firewood from approximately 50 acres of the Black Mesa thinning project on the Mount Taylor Ranger District. Ancestral Lands tribal youth conservation crews have been hired to begin removing firewood to Forest Service roadsides. This will provide wood for communities such as Torreon Chapter and Pueblo Pintado Chapter (Navajo Nation). In 2024, the Cibola entered into two more agreements directly related to fuelwood for tribes. The first was a participating agreement with the Forest Stewards Guild entitled "Zuni Mountains Community Fuelwood and Invasives". This agreement is providing funding to the Forest Stewards Guild to hire a community fuelwood coordinator for the Zuni Mountain area who has been engaging tribal communities around the area to assess the viability for local fuelwood

bank projects. The second agreement in 2024 is entitled “Zuni Mountain Wood for Life” and was entered into with the National Forest Foundation. This agreement has provided over \$250,000.00 to establish and haul fuelwood to Tribal wood banks. Four wood banks are being established on the Navajo Nation – Standing Rock Chapter, Ramah Navajo, Rock Springs Chapter, and Nahata Dzill. Up to 2,500 cords of firewood will be hauled to these fuelwood banks over the next 2-3 years. This wood will be provided free of charge to tribal communities with the intent of providing wood to the elderly, disabled, and other households in need of wood for heating and cooking. In addition, this agreement will also provide wood for the construction of hogans on the Ramah Navajo.

Results indicate that the Cibola is actively pursuing partnerships and projects related to providing access to forest resources for ceremonial and traditional use by tribes. As projects develop and are implemented, more data will become available to evaluate this question.

Recommendations:

It is difficult and perhaps not appropriate for the Cibola to track permit issuance by tribal entity or community. The Cibola recommends that future reports focus more on authorization letters, partnerships, and projects to evaluate this monitoring question.

Question 3:

Is the Cibola providing resources important for subsistence and economic support to rural historic communities?

Background Narrative:

The Cibola National Forest provides resources important for the subsistence and economic support to rural historic communities in part through the sale of Forest Products to the public. The primary product sold is firewood for both heating and cooking. However, other products such as latillas (small [3-6” diameter] tree stems used for the construction of traditional SW ‘coyote’ fencing), vigas (whole tree ceiling rafters used in adobe construction), and wildlings (saplings for planting and landscaping) are also sold to the public.

Data Sources: NRM Database Queries

Evaluation Criteria:

Personal use permits sold on the National Forest is tracked in the Natural Resources Manager (NRM) database at the time permits or sales are sold. Thus, permit sales only reflect the volume (or quantity) sold to a member of the public rather than what is harvested for personal use.

Other, more qualitative measures may also be utilized to gauge how well the Cibola is providing resources to rural historic communities. Such as evaluating the types of projects the National Forest is implementing under the Forest Plan which contain components related to providing natural resources to communities.

Monitoring Results:

As the BMER progresses the Cibola National Forest will monitor permit sales by product category and evaluate trends.

Table 16: Shows Fiscal Year 2023 permit sales by product category.

Federal Fiscal Year 2023	Dead & Down Fuelwood (cords)	Green Fuelwood (cords)	Vigas, Latillas, &/or Pole Logs (poles)	Wildlings (tree)	Fence Posts (posts)
Cibola National Forest					
Ranger District					
Mt. Taylor	11,015	0	655	16	0
Magdalena	3,230	1,380	0	0	4
Mountainair	1,086	253	51	0	0
Sandia	19	0	0	47	0

With respect to qualitative monitoring and plan implementation, examples of recent projects on the Cibola National Forest include the Isleta Green Fuelwood Blocks on the Mountainair Ranger District. In 2023, 253 cords were provided to commercial wood harvesters who sell firewood as a part of their living.

Question 4:

Is the Cibola moving toward desired conditions by providing grazing opportunities in support of our local economies?

Data Sources:

Primary database is Natural Resources Manager (NRM). This database tracks a number of metrics tied to Sustainable Rangelands and Livestock Grazing. These include but are not limited to: permitted livestock numbers, authorized livestock use, actual use, and number of livestock permittees. Demographics however are not part of the database.

Evaluation Criteria:

Evaluation Criteria for the monitoring question is based on comparing total permitted use to actual use. Permitted use is the maximum number of livestock allowed and the season of use. This is compared to authorized use, which is the total number of livestock and season of use allowed for a given year based on personal preference which is what a livestock permittee requests to use, and other environmental factors which include but are not limited to, past, current and predicted precipitation patterns, past, present and predicted forage conditions, and condition of existing range improvements which may include pasture and boundary fences, condition of water improvements including water developments, and stock ponds. In addition, other sideboards are also taken into consideration when determining authorized use.

Other factors include desired conditions identified in NEPA authorizing the livestock use and accompanying decision, and other sideboards which may include threatened and endangered species, riparian objectives for perennial and ephemeral waterways and other desired conditions, standards, and guidelines identified in the Cibola National Forest Land Management Plan.

In comparing demographic data from USDA National Agricultural Statistics Survey (NASS) provides a broad view of ownership by ethnicity and female gender. The data is broad based and does not provide a specific metric for operations with permitted livestock use on federal lands however on a county basis provides trends that can be correlated to livestock operations on the Cibola National Forest. A complete subset of

this data was not analyzed however a sampling of McKinley County provides a snapshot of data from calendar year 2022. The data is collected on a five-year frequency which would place the census to occur again in year 2027.

Monitoring Results:

Since the inception of the LMP in 2022, authorized use has dropped about 10% from 85% authorized use to 76% based on a three-year average. This decrease may have been attributed to drought conditions experienced in 2022 but bounced in subsequent years. Overall, the trend which shows authorized use below permitted use continues.

Tables 17 & 18 Permitted Animal Unit Months (AUM's) compared to Authorized AUMS

PERMITTED AUM'S	2022 AUTHORIZED	2023 AUTHORIZED	2024 AUTHORIZED
142,284	82,571	132,600	108,417

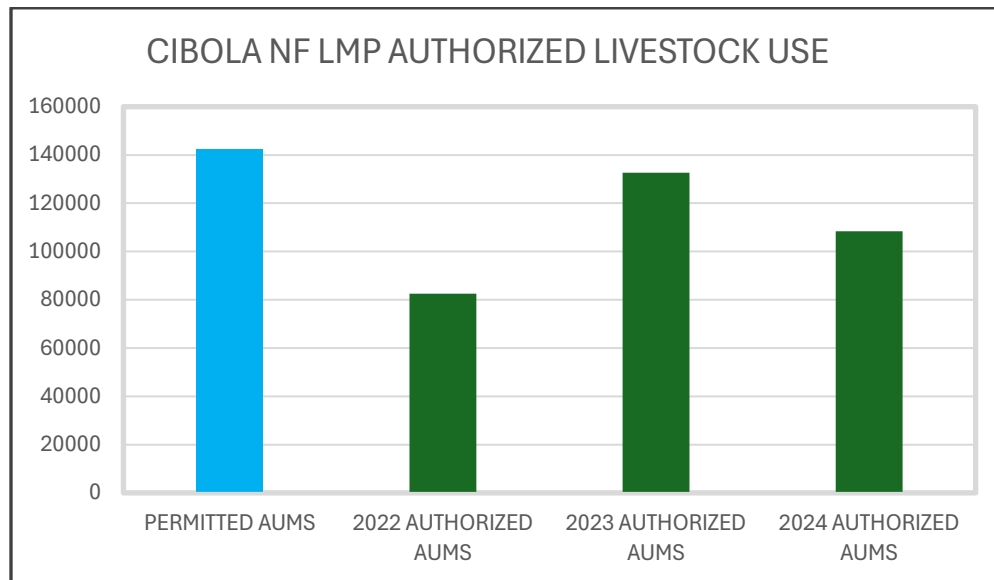
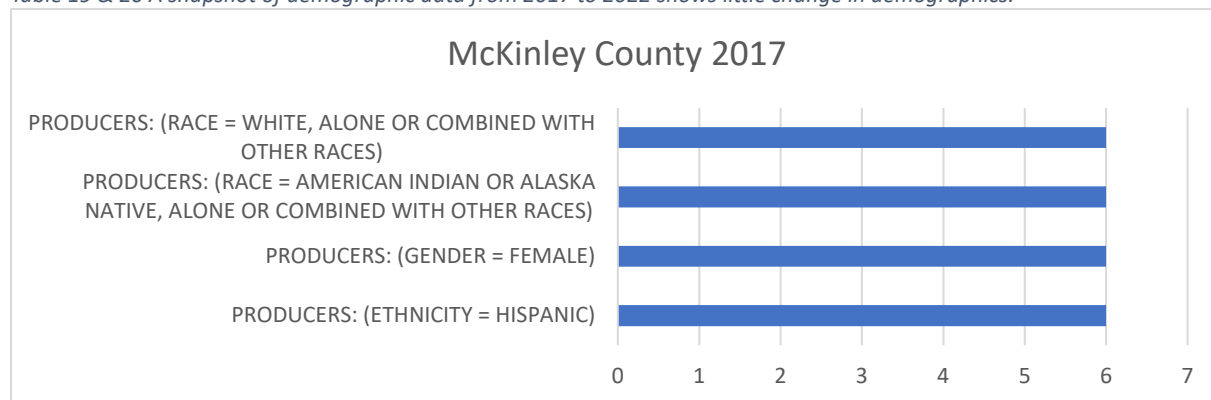
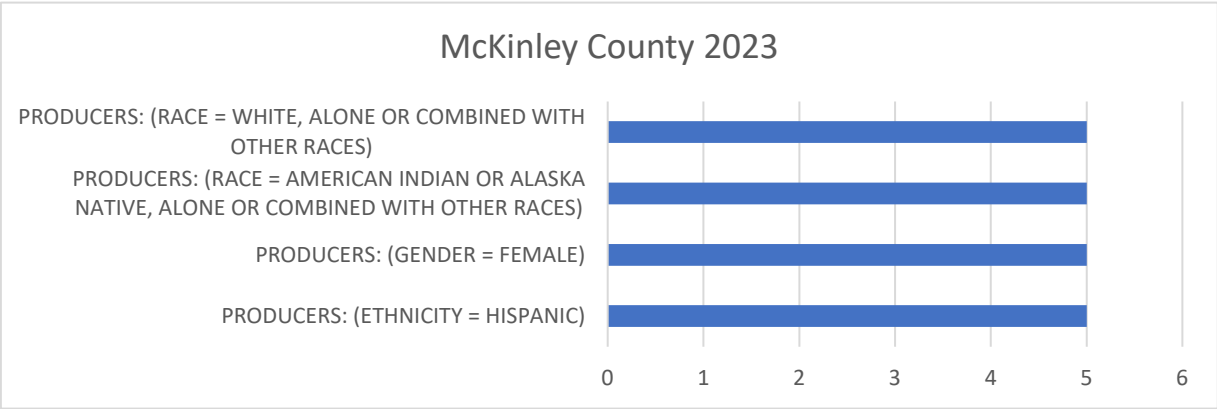


Table 19 & 20 A snapshot of demographic data from 2017 to 2022 shows little change in demographics.





Recommended Changes Based on Results:

Since existing data sets are relatively broad-based, studies such as “Livestock Ranching and Traditional Culture in Northern New Mexico” could be specifically designed for the Cibola National Forest Land Management Plan to assess impacts to local communities. This study referenced in the Cibola National Forest Land Management Plan provides detailed analysis of local agricultural communities and has proved invaluable in quantifying this particular metric.

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