



United States Department of Agriculture
Forest Service

2022 Biennial Monitoring and Evaluation Report

Toiyabe National Forest Land and Resource Management Plan



May 2022

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Crater lake Meadow Carson Ranger District, C. Howell.

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Summary of Findings and Results

The following table summarizes the results and recommendations of the 2022 Biennial Monitoring information provided in this report. Recommended changes to the management of NFS lands, and implementation of best management practices associated with forest projects will be implemented during the next monitoring cycle. Recommended changes to the Monitoring program, either changes to the monitoring questions or the indicators, will require an administrative change to the Forest Plan monitoring program. The proposed changes are included in the findings for the Monitoring Questions in the main body of the report. Table 1 identifies which monitoring items require a change. For more detail see the Monitoring item in the body of this report.

Table 1. Summary of findings

Monitoring Item	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?	If a change may be warranted, where may the change be needed?²
MON-WTRSHD-01) How is watershed condition changing?	No	Yes	There is a need to conduct an assessment to determine the causes and potential response to the high number of sub-watersheds across the Forest that fall into the Functional-at-Risk or Non-Functional condition class.
(MON-AQH-01) What water bodies are not meeting desired water quality conditions?	No	No	N/A
(MON-SOIL-01) How are characteristics of soil health and productivity changing?	No	Yes	BMP Monitoring indicates a need to change management practices and implementation.
(MON-SOIL-02) How are management activities affecting soil health and productivity?	No	Yes	BMP Monitoring indicates a need to change management practices and implementation.
(MON-VEG-COND-01) What changes have occurred to landscape scale vegetative community types?	Uncertain (B)	Yes	There is a need to change site specific monitoring protocols to determine the relationship of disturbance caused by authorized livestock and wild horses and burros. Projects are currently under way to provide more accurate data for Cheatgrass and Medusahead. Need to

Monitoring Item	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?	If a change may be warranted, where may the change be needed? ²
			incorporate this data in next monitoring report and change to include all annual invasive grasses.
(MON-VEG-COND-02) How are current allotment management strategies effective in meeting or moving toward desired conditions?	Yes	No	N/A
(MON-FOCAL-SPECIES-01) How is the abundance and distribution of <i>Populus tremuloides</i> (aspen) changing over time?	Yes	No	N/A
(MON-FOCAL-SPECIES-02) What do aquatic macroinvertebrate communities indicate about stream ecosystem integrity?	Yes	No	N/A
(MON-FOCAL-SPECIES-03) How is the abundance and distribution of invasive annual grasses (e.g. <i>Bromus tectorum</i> (cheatgrass)) changing over time?	Uncertain (B)	No	N/A
(MON-T&E-01) Are Forest management activities affecting recovery of T and E species?	Yes	Yes	There is a need to conduct an assessment to determine the causes and potential response to the high number of watersheds across the Forest that fall into the Function at Risk or non-function class.

Monitoring Item	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?	If a change may be warranted, where may the change be needed? ²
(MON-REC-01) Is the Forest's developed recreation program meeting visitor needs and providing for public health and safety at Forest facilities?	Uncertain (A)	No	N/A
(MON-REC-02) Is the Forest's dispersed recreation program meeting visitor needs?	Uncertain (A)	Yes	Need to modify the indicator #5 it is redundant with indicator #4.
(MON-REC-03) Do visitors have safe and sufficient access to recreational opportunities and other areas of interest around the Forest?	Uncertain (A)	No	N/A
(MON-WILD-01) How is wilderness character being preserved on wilderness areas across the Forest? Is fire being allowed to maintain its natural role as an ecosystem component within wilderness?	Uncertain (A)	No	N/A
(MON-CULT-01) Is there active enhancement and interpretation of historic properties eligible for the National Register of Historic Places that will encourage public interest?	Uncertain (A)	No	N/A
(MON-CULT-02) Are significant properties being evaluated for eligibility to the National Register and nominated to the register if eligible? Are these resources being protected?	Uncertain (A)	No	N/A

Monitoring Item	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?	If a change may be warranted, where may the change be needed? ²
(MON-CULT-03) What is the Forest's progress in achieving a forest-wide cultural resource inventory?	Uncertain (A)	No	With the inconsistencies between the Humboldt NF and the Toiyabe NF Cultural Resources Monitoring Programs there is a need to change the two monitoring programs to make them consistent.
(MON-CLIM-01) How is climate change altering patterns of recreational activities and visitor use on the Forest?	Yes	Yes	Need to change Indicator #1 to remove components where data is unavailable.
(MON-CLIM-02) How do recent temperature and precipitation trends (1-5 years) compare to long term averages (30+ years)?	Yes	No	N/A
(MON-CLIM-03) How do recent stream discharge trends (1-5 years) compare to long term averages (30+ years)?	Yes	No	N/A
(MON-WHB-01) What are the actual or estimated numbers of wild horses and burros (compared to AML where set)?	No	Yes	There is a need to change management so that horse and burro populations can be managed within AML.
(MON-MULTI-01) What are the economic conditions in local communities that could affect the impact of forest contributions to local economies?	Yes	No	N/A

Monitoring Item	Do monitoring results demonstrate intended progress or trend toward Plan targets?	Based on the evaluation of monitoring results, may changes be warranted?	If a change may be warranted, where may the change be needed? ²
(MON-MULTI-02) What economic contributions are forest-based recreation, forest products, mining and grazing making to local communities?	Yes	No	N/A
(MON-MULTI-03) Are Forest boundary adjusted to consolidate ownership and improve public access?	Yes	No	N/A
(MON-Fire -01) How is fire and fuels management being used for resource benefit?	Yes	No	N/A
(MON-FIRE-02) Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)?	No	Yes	Need to remove Monitoring question from Monitoring Program.
¹ Interval of data collection is beyond this reporting cycle (A); or more time/data are needed to understand status or progress of the plan component (B); or methods/results are inadequate to answer monitoring question (C). ² see body of the report for more details regarding any specific recommendations/opportunities for change.			

Based on results of the monitoring program the Toiyabe National Forest Plan is working as intended. This monitoring report indicates a need to make minor changes to the Monitoring Program. There is no intention to make the changes prior to Forest Plan Revision. At times problems arise during project planning resulting from the age of the plan and absence of measurable plan level desired conditions and objectives. When such issues occur, the Forest will determine if a project specific plan amendment would address the issue or if a programmatic change to the plan is required.

While the Biennial Monitoring Report provides some data for the Cultural Resource Monitoring questions a transition of data from one platform to another resulted in the inability to provide accurate or current data for some questions. The data transfer should be complete in time for full responses in the 2024 report.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred between may of 2020 and May of 2022 on the Toiyabe National Forest. Monitoring on some topics is long-term and evaluation of those data will occur later in time.

I have evaluated the monitoring and evaluation results presented in this report. I have examined the recommended changes to the 1986 Land Management Plan, as amended at this time. As a result of my review, I consider the 1986 Land Management Plan sufficient to continue to guide land and resource management of the Toiyabe National Forest for the near future and plan a deeper examination of the recommended changes through engagement with resource specialists and the public. Information about public engagement sessions will be posted on the H-T website when available.

William A. Dunkelberger
Forest Supervisor
Humboldt-Toiyabe National Forest

Date

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INTRODUCTION

Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official determine whether a change is needed in forest plan direction, such as plan components or other plan content that guide management of resources in the plan area. The biennial monitoring evaluation report represents one part of the Forest Service's overall monitoring program for this national forest unit. The biennial monitoring evaluation report is not a decision document; it evaluates monitoring questions and indicators presented in the Plan Monitoring Program chapter of the forest plan, in relation to management actions carried out in the plan area. In April of 2016 the Toiyabe National Forest Land and Resource Management Plans Monitoring Program (Chapter 5) was modified to meet the requirements of the 2012 planning rule by May 2016. This modified monitoring program is presented below in this biennial monitoring report.

Monitoring and evaluation are continuous learning tools that form the backbone of adaptive management. For this reason, we will produce an evaluation report every two years. This is our third written report of this evaluation since the Toiyabe National Forest Plan Monitoring program was finalized in 2016. This report indicates whether a change to the forest plan, management activities, monitoring program or forest assessment may be needed based on the new information. The 2022 biennial monitoring reports for the Humboldt-Toiyabe National Forest are available at <https://www.fs.usda.gov/main/htnf/landmanagement/planning>.

Our Monitoring covers these eight topics required under FSH 1909.12, in addition to social, economic, and cultural sustainability. You'll find each of these topics addressed in the report.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 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. The 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 may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a))

Objectives

There are several objectives for this report, including:

- ◆ Make information obtained from monitoring available to the public in a form that is readily understandable.

- ◆ Document implementation of the Plan Monitoring Program including changed conditions or status of key characteristics used to assess accomplishments and progress toward achievement of the selected Land and Resource Management Plan components.
- ◆ Assess the current condition (i.e., status) and trend of selected forest resources.
- ◆ Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan.
- ◆ Present recommended change opportunities to the responsible official.

How Our Plan Monitoring Program Works

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12). The Toiyabe National Forest monitoring program was updated in *April 2016* for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Toiyabe National Forest Plan was administratively changed to include the updated monitoring program (Chapter 5). For a copy of the current monitoring program go to [fseprd541251.pdf \(usda.gov\)](#). Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)]. See the Plan Monitoring Program for discussion on how the monitoring questions were selected to be consistent with the 2012 planning regulations 36 CFR 219.12.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This biennial monitoring evaluation report is the vehicle for disseminating this information.

Monitoring Objectives

The objectives of our plan monitoring plan include:

- ◆ Assess the current condition and trend of selected forest resources.
- ◆ Document implementation of the Plan monitoring Program
- ◆ Evaluate relevant assumptions, changed conditions, management effectiveness, and progress towards achieving the selected desired conditions, objectives, and goals described in the Forest Plan.
- ◆ Assess the status of previous recommended options for change based on previous monitoring & evaluation reports.
- ◆ Document scheduled monitoring actions that have not been completed and the reasons and rationale why.
- ◆ Present any new information not outlined in the current plan monitoring program that is relevant to the evaluation of the selected monitoring questions.
- ◆ Present recommended change opportunities to the responsible official.

How to Use this Report

This report is a tool and a resource for the Humboldt-Toiyabe National Forest to assess the condition of forest resources in relation to Forest Plan direction and management actions. It is also a tool and a resource for the public to learn more about how the Forest Service is managing forest resources.

This monitoring report, along with the biennial monitoring report prepared for the Humboldt National Forest will be used to identify where the forest needs to take or change management

practices to improve the conditions of the natural, physical or social resources found on the Forest. The monitoring reports will be used to provide information regarding the need for change and supporting information as the forest begins the Forest Plan revision process.

The biennial monitoring evaluation report is intended to help people understand how the reported results compare to the result of past monitoring reports and the broader-scale monitoring strategy that is issued at the Forest Service Regional level.

MONITORING EVALUATION

Water

MON-WTRSHD-01: How is watershed condition changing?

Indicator 1: Watershed condition indicators (Class) from the Watershed Condition Framework.

Data source: Data were retrieved from the US Forest Service Watershed Condition Assessment Tracking Tool (WCATT) database.

Indicator 2: Essential projects completed.

Data source: Data were identified by personal knowledge of the Forest watershed staff of projects completed on the Forest. In addition, USFS Natural Resource Manager (NRM) support staff ran a query for the Forest to confirm project status.

Monitoring Result

Indicator 1: Data show 12 sub-watersheds are in a Functional condition, 251 sub-watersheds are in a Functional-at-Risk condition, and 16 sub-watersheds are in a Non-Functional condition. This represents a change in condition since the previous monitoring report in which five sub-watersheds have declined from Functional to Functional-at-Risk condition.

Most watersheds were rated for functionality in 2011 during a rapid assessment which was based on available spatial data and professional judgement of resource specialists with on-the-ground knowledge of certain watershed condition considerations. A few watershed condition class ratings have been updated in the intervening years as new or better data became available as noted above with the change in condition class. The two most common indicators rated individually as Non-Functional were Aquatic Habitat and Riparian/ Wetland Vegetation.

Indicator 2: Data show that no essential projects were completed in either of the two Priority Watersheds currently identified in the planning area in the remainder of FY20 or FY21.

Finding:

Indicator 1: Because the watershed classification data which are available to inform Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that additional targeted watershed condition assessments will occur in 2023 and that all watersheds will be reassessed in 2026 based on recent discussions. While current watershed condition data seem to indicate a need for changing either the Toiyabe National Forest Plan or management

within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need.

Indicator 2: Monitoring does not indicate a need for change of the Toiyabe National Forest Plan.

MON-AQH-01: What water bodies are not meeting desired water quality conditions?

Indicator 1: Miles of impaired 303(d) streams.

Data source: Data were retrieved from spatial Integrated Water Quality Report data for both California (data collected in 2018) and Nevada (data collected in 2018). Nevada currently has a Draft 2020-2022 version that has not yet been completed and therefore was not accounted for in this report.

Indicator 2: Aquatic macroinvertebrate metrics (where sampled).

Data source: 2016 Macroinvertebrate Report prepared by BLM/USU National Aquatic Monitoring Center, Logan, Utah.

Monitoring Result

Indicator 1: Data show 101 miles of impaired streams and 0.01 acres of impaired lakes/reservoirs on USFS managed lands in Nevada and 166 miles of impaired streams and 90 acres of impaired lakes/reservoirs on USFS managed lands in California.

Indicator 2: Macroinvertebrate collections were collected in 2018 from Silver King Creek and tributaries within the East Fork Carson River Watershed. Number of EPT taxa as well as number of intolerant taxa present indicate that stream ecosystem integrity is meeting desired conditions in that watershed. The Hilsenhoff Biotic Index averaged 2.7 which is indicative of a healthy stream ecosystem. The average number of EPT taxa was 16 which also indicated that the stream ecosystem integrity was excellent. No other water bodies were sampled.

Finding

Indicator 1: Does not indicate a need for changing the Toiyabe National Forest Plan. However, several streams, lakes, and reservoirs are listed as not attaining water quality standards for identified beneficial uses and include the following increases from the previous monitoring report on USFS managed lands: 11 additional stream miles in Nevada, 66 additional stream miles in California, and 10 additional acres of lakes/reservoirs in California. It is worth noting that the large increase in additional impaired stream miles in California may be attributed to the 303(d) list in the California Integrated Report including Category 4a, 4b, and 5 stream segments. The previous monitoring report most likely only accounted for Category 5 stream segments which are water bodies the US EPA requires to be included on the 303(d) list.

Generally, management under the Forest Plan is intended to preserve, conserve, or improve water quality. In some cases, altered management may lead to an improvement in or in some cases more rapid improvement of water quality.

Indicator 2: Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

Soil

MON-SOIL-01: How are characteristics of soil health and productivity changing?

Indicator 1: Change in surface organic matter (litter).

Data Source: Long term monitoring plot data from H-T GIS.

Indicator 2: Soil temperature trends at select locations.

Data Source: National Water and Climate Center:
<https://www.nrcs.usda.gov/wps/portal/wcc/home/>

Indicator 3: Depth to water at select locations.

Data Source: USGS Groundwater network:
<https://groundwaterwatch.usgs.gov/StateMap.asp?sa=NV&sc=32>.

Well log data for all wells in Nevada can be found at: water.nv.gov

Well data for California can be found at: rms.waterboards.ca.gov/Indicator 4: Soil stability: Erosion and sedimentation.

Indicator 5: BMP implementation and effectiveness monitoring.

Data Source: USFS RO4 BMP monitoring database

Indicator 6: Burn severity (any management activity that uses fire as a tool).

Data source: Ecological condition monitoring plots, climate station data, BMP monitoring reports. Burn Severity: <https://burnseverity.cr.usgs.gov/baer/>

Monitoring Results

Indicator 1: Prior to this monitoring period, long term monitoring plots on uplands were showing slight increases in litter, basal area, overstory cover, and corresponding decreases in bare soil. Some of the more heavily used rangelands are seeing increases in cheatgrass, lowering soil productivity. Due to a staff retirement, long-term monitoring plots have not been revisited since 2019. Based on historic data organic matter conditions at the plots have remained static. Loss of organic matter has occurred locally within wildland fire locations. Older fire locations are seeing an increase in organic matter from the reestablishment of herbaceous vegetation.

In 2020 and 2021, eight fires burned over 86,200 acres of the Toiyabe portion of the National Forest. Total acres burned that included other federal, state, and private lands totaled 167,823 acres. Physical impacts to the soil from the heat by the fires included changes in soil structure, reduced infiltration, increased hydrophobicity, and increased runoff and erosion. In addition, the effects of these fires have removed all organic matter from these areas. Loss of vegetative cover has exposed soils to higher surface and near surface temperatures. Once vegetation recovers in these fire areas, erosion rates will decrease, litter will increase, and soil temperatures will return to pre-fire conditions.

Numerous post fire treatments were implemented in these fire areas predominately in late 2020 and 2021. Additional funding has been received to implement additional restorative treatments in

2022. It is a little too early to tell how the fire areas are recovering naturally and from the treatments. The next monitoring report should provide a better analysis of the fire recovery.

Indicator 2: Soil temperature continues to be measured by a variety of SnoTel, SCAN, and other micrometeorological stations. Efforts are currently ongoing to compile this data to start developing trends to determine if any long-term changes in soil climate is occurring. There are currently 27 various stations currently collecting climate data on the Toiyabe portion of the H-T NF. Bridgeport RD (6 stations), Carson RD (11), Austin-Tonopah (1), SMNRA (9)

Note: While the SNOTEL stations have been collecting atmospheric climate data for up to 40 years, soil temperature and soil moisture sensors were only installed in the past 15 years. Ideally, we would need 30 continuous years of data to start developing quality trend data.

Indicator 3: No Forest Service data. Groundwater level monitoring is conducted by the state or USGS.

Indicator 4: Physical impacts such as soil compaction, and changes in vegetative composition from wetland to upland species is indicative of a loss of upward capillary movement of water in the soil thereby lowering of the water table. On the uplands, over population of wild horses on the have resulted in low amounts of vegetative ground cover, compacted soils, high amounts of bare soil resulting in reduced soil productivity.

Wild horse use is impacting uplands, springs, and streams at lower elevations particularly on the West side of the Austin-Tonopah RD and the North end of the Spring Mountains.

Indicator 5: BMP Monitoring is currently ongoing though none have been completed at this time.

Indicator 6: No known prescribed fires had any burn severity conducted on them.

Finding

Indicators 1 and 4: Soil health and productivity across the Toiyabe portion of the forest is for the most part stable. Localized impacts from wildfire, cattle, sheep, and wild horses have reduced soil health and productivity due to loss of surface organic matter, increased soil compaction, high amounts of bare soil, and accelerated erosion and sedimentation.

Riparian plots surveyed on the Bridgeport RD has have predominately shown stable to improved soil health. Vegetative ground cover and composition is high, soil compaction is localized around water developments, bare soil is low. Water tables support riparian vegetation.

Projects to convert pinyon-juniper woodlands back to sagebrush ecosystems are ongoing. Soil function in those areas is improving,

Due to staffing vacancies, long term monitoring plots have not been revisited and not additional monitoring data has been gathered. Based of historic data organic matter conditions at the plots have remained static. Loss of organic matter has occurred locally within wildland fire locations. Older fire locations are seeing an increase in organic matter from the reestablishment of herbaceous vegetation.

Indicator 3: Recommend removing this indicator as the Forest Service does not monitor groundwater levels. Groundwater level monitoring which is conducted through well monitoring is conducted by USGS through their network or by the states as part of the network of municipal and domestic well system associated with water rights. Most wells are on private land or public lands some of which, as part of the USGS network, are located adjacent to Forest Service lands.

Recommend inserting a monitoring indicator describing the health of Groundwater Dependent Ecosystems across the forest. GDE monitoring is currently ongoing on the SMNRA.

Indicator 6: Due to high national wildfire severity conditions no fires were allowed to burn for resource benefit. Three wildfires occurred in 2020 (Mahogany, Cottonwood – SMNRA, Slink – Bridgeport), and one fire in 2021 (Mountain View – Bridgeport). Burn severity of those fires were predominately low and moderate severity)

MON-SOIL-02: How are management activities affecting soil health and productivity?

Indicator 1: Change in surface organic matter (litter).

Data Source: Long term monitoring plot data from H-T GIS.

Indicator 2: Soil stability: Erosion and sedimentation.

Indicator 3: BMP implementation and effectiveness monitoring.

Data Source: USFS RO4 BMP monitoring database

Indicator 4: Burn severity (any management activity that uses fire as a tool).

Data source: Ecological condition monitoring plots, BMP monitoring reports. Indicator #5 data were retrieved from the USFS R04 BMP Monitoring database.

Monitoring Results

Indicator 1: Ecological monitoring plots on uplands are showing increases in litter, basal area, overstory cover, and corresponding decreases in bare soil. Some of the more heavily used rangelands are seeing increases in cheatgrass and bare soil, lowering soil productivity.

Due to staffing vacancies long-term monitoring plots have not been revisited. Based of historic data organic matter conditions at the plots have remained static. Loss of organic matter has occurred locally within wildland fire locations. Older fire locations are seeing an increase in organic matter from the reestablishment of herbaceous vegetation.

Indicator 2: Wild horse use is impacting uplands, springs and streams at lower elevations on the Austin/Tonopah Ranger district and Spring Mountains National Recreation Area. Changes in vegetative composition from wetland to upland species is being caused by increased soil compaction, bare soil, and accelerated erosion.

Indicator 3: No BMP Monitoring has been completed at this time.

Indicator 4: No prescribe fires were monitored for burn severity during the reporting period.

Finding

Soil health and productivity across the Toiyabe portion of the forest is for the most part stable. Localized impacts from prescribed burning, cattle, sheep, and wild horse grazing, recreation management has reduced soil health and productivity due to loss of surface organic matter, compaction and accelerated erosion.

Projects to convert pinyon-juniper woodlands back to sagebrush ecosystems are, for the most part, improving the soil function in those area. These projects will result in higher vegetative

ground cover to effectively reduce erosion and sedimentation. A few of those areas have seen an increase in annual brome (cheatgrass) that are negatively affecting the health of those soils by outcompeting the establishment of native vegetation.

Watershed, and site-specific restoration projects are being implemented to reduce erosion on uplands, and improve riparian soil function, along streams and spring systems. Two identified priority Watershed Restoration Action plans on the Austin-Tonopah and Spring Mountains NRA are close to being completed. Nearly all projects to improve soil health and restore soil function have been successfully implemented.

Vegetation

MON-VEG-COND-01: What changes have occurred to landscape scale vegetative community types?

Indicator 1 Invasive and noxious species, sagebrush, pinyon-juniper, white bark pine, bristlecone, wet-to-dry meadows and riparian zones, aspen, and fir encroachment.

Data source: Ecological Condition Monitoring Plots

Indicator 2 Fire risk assessment, fire regime condition class, and wildfire

Data source: Corporate Data Warehouse – FACTS, Interagency Fire Dispatch Center/GIS

Monitoring results:

Indicator 1: No Ecological Condition Monitoring Plots have been surveyed since 2019. The most recent monitoring results were included in the 2020 Monitoring Report and are copied here. Twenty plots were established or reread on the Carson and Bridgeport Districts in 2018 and 2019. Two of these plots were located on the Bridgeport District, and eighteen were in meadows on the Carson District. Five of the plots are repeated readings of long term established plots.

One riparian and one sagebrush plot were established on the Bridgeport Ranger District in 2018. The sagebrush plot is in a burned area, and monitoring data indicates the site is recovering. Grasses and shrubs are re-sprouting and re-populating the site. This site has some invasive annual forbs and one noxious weed (*Salsola kali*) present. A plot was read in a riparian meadow on the Bridgeport District, and an old, non-functional trough was identified as needing to be moved out of the meadow to help the site recover and to better distribute livestock.

Five monitoring plots were repeated on the Carson District in 2018 and 2019. Three of the high elevation meadow sites were in moderate condition with a stable trend, one was in good condition with a stable trend, and one was in good condition with a slight downward trend.

Fourteen new plots were established on the Carson District in 2018 and 2019. One plot was in poor condition, ten plots were in moderate condition and one plot was in poor condition.

The following table contains acreages for community types listed in indicator #1 on a forest-wide scale.

Species	Acres
Cheatgrass	3,110
Medusa Head	3,299

Species	Acres
Aspen	195,260
Fir	703,848
Pinyon Juniper	2,345,959
Meadow Ecosystems (Wet & Dry)	116,640

Indicator 2: Invasive weeds continue to move and expand into disturbed meadow sites but have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Invasives present in meadows on the Bridgeport and Carson Districts are cheatgrass (*Bromus tectorum*), wild iris (*Iris missouriensis*), dandelion (*Taraxacum officinale*), owl clover (*Orthocarpus* spp.), goosefoot (*Chenopodium* spp.), plantain (*Plantago* spp.), curly dock (*Rumex crispus*), tumbled mustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), shepardspurse (*Capsella bursa-pastoris*), wild rose (*Rosa woodsii*) and grey rabbitbrush (*Ericameria nauseosa*).

No noxious weeds were found in any of the plots in 2018 and 2019.

Fire risk was reduced, and fire regime condition class moved towards improved conditions because of forest vegetation and fuels reduction treatments. In 2020 and 2021 forest fuels treatments totaled 49,386 acres (9,546 and 39,840 acres respectively). These treatments represent a continued increase in the number of treatments on the forest over the last 5 years.

Finding

Indicator 1: Changes in wetland vegetative communities where wild horses and burros (WHB) are present in active grazing allotments indicate a need to change site specific monitoring protocols. Increasing the number of monitoring plots and how often data is collected in a) areas where WHB and livestock grazing occur, b) where WHB exists without livestock grazing, and c) where WHB do not exist in active grazing allotments and analyzing for differences in changes to riparian and other wetland vegetative community types will provide a better understanding for need for change in management activities.

Indicator 2: Noxious weeds are being treated and there are positive signs of success in treatments, but infestations of new species are occurring, and few restoration projects have resulted in a reduction of invasive species. Some community types have proven to be less than reliable as indicators of management action and planning. For example, a loss of 5,000 acres of sagebrush community may not register a significant change if monitoring accounts for millions of acres. Secondly, evaluating the expansion or loss of bristlecone acres are particularly challenging and less useful for managers as those communities change at extremely slow rates. Additionally, as whitebark and limber pine share ecological parameters, geographic range, and a similar reflective index, there exists a low confidence level in being able to discern between the two communities from a landscape scale. Therefore, there is a need to remove sagebrush, whitebark and bristlecone pine from monitoring as they are poor indicators of management action or the need for change in strategies.

MON-VEG-COND-02: How are current allotment management strategies effective in meeting or moving toward desired conditions?

Indicator 1: Ground cover, invasive species, Aspen, species composition, water quality, soil productivity to determine satisfactory condition.

Data source: Ecological Condition Monitoring Plots

Monitoring Results

Indicator 1: Due to staffing vacancies, no Ecological Condition Monitoring Plots have been surveyed since 2019. The most recent monitoring results were included in the 2020 Monitoring Report and are copied here. In general, streams and riparian meadows in most allotments are at desired condition or trending toward desired condition. Noxious weed occurrences have remained fairly stable, with areas being treated almost equaling areas being inhabited. Some allotments are not meeting desired condition and need improved allotment management strategies.

Most sagebrush sites are in functional condition and stable and meeting desired conditions. However, Wyoming big sagebrush and low sagebrush sites with annual invasive grasses are at risk of conversion to annual grass dominated sites if they burn.

Many allotments with wild horse and burro populations are not meeting desired conditions in riparian or upland settings. Wild horse and burro populations are over AML and leading to severe deterioration of upland and riparian communities.

Finding

Indicator 1: Many grazing allotments are meeting desired conditions or trending toward desired conditions. Monitoring data indicates that work by Forest staff with ranchers/permittees has resulted in grazing management changes that are leading the Forest toward better vegetation and soil condition scores across much of the area sampled. However, there are allotments that need improved management strategies to improve conditions, primarily in riparian areas. Continued grazing management in line with Forest Plan direction, should benefit ecological condition on allotments across the Forest. There is a need to monitor the effects of elk on aspen stands and in elk wintering areas as well as the effects from wild horse and burro populations. There is also a need to manage wild horse and burro populations to AML.

Focal Species

MON-FOCAL-SPECIES-01: How is the abundance and distribution of *Populus tremuloides* (aspen) changing over time?

Indicator 1: Spatial extent (acres), regeneration, disease, age classes, and understory, (soil temperatures - climate change).

Data source: Ecological Condition Monitoring Plots, NRCS SNOTEL climate station data.

Monitoring Results

Indicator 1: Due to staffing vacancies, no Ecological Condition Monitoring Plots have been surveyed since 2019. The most recent monitoring results were included in the 2020 Monitoring Report and are copied here. Two aspen plots were re-sampled on the Bridgeport Ranger District in 2017. One of the aspen stands had a slight upward trend, and the other stand had a downward trend. The aspen stand with the downward trend appeared to be suffering from a loss of regeneration and understory structure. There were very few aspen suckers or saplings on the 2017

reading of this transect, when compared to the 2011 monitoring results. On the Tonopah District where wild horse and elk use overlaps, some aspen stands are impacted by elk rubbing and chewing the bark.

One sagebrush plot was sampled on the Bridgeport Ranger District in 2018. This sagebrush plot was at high elevation in a rested area of the district and indicated the ecosystem was in functioning condition with a slight upward trend.

Some of the SNOTEL stations collecting soil temperature data are in aspen communities. Efforts are currently ongoing to compile this data to start developing trends to determine if any long-term changes in soil climate is occurring.

Finding

Indicator 1: Based on the 2020 Monitoring Report, some aspen decline is occurring in the Bridgeport District, however, these are small, isolated incidents, and the general trend is upward. In the Austin-Tonopah District, there is aspen decline at higher elevations, where elk are feeding and rubbing on trees. There is not clear indication that plan, or management direction needs to change.

While the SNOTEL stations have been collecting atmospheric climate data for up to 40 years, soil temperature and soil moisture sensors were only installed in the past 15 years. There is a need for 30 years of data to start developing quality trend data. At some of the longer functioning SNOTEL stations, we may be able to start seeing changes in air temperature and precipitation data. Warmer temperatures and lower precipitation add stress to the aspen at the lower elevational boundaries opening them up to disease.

MON-FOCAL-SPECIES-02: What do aquatic macroinvertebrate communities indicate about stream ecosystem integrity?

Indicator 1: Diversity; species composition; and other indices of macroinvertebrate response to current conditions (e.g., index of biotic integrity [IBI], Ephemeroptera, Plecoptera Trichoptera index [EPT]).

Data source: 2018 Macroinvertebrate Report prepared by BLM/USU National Aquatic Monitoring Center, Logan, Utah.

Monitoring Results

Indicator 1: Macroinvertebrate collections were collected in 2020 from Silver King Creek and tributaries within the East Fork Carson River Watershed. Number of EPT taxa as well as number of intolerant taxa present indicate that stream ecosystem integrity is meeting desired conditions in that watershed. The Hilsenhoff Biotic Index averaged 2.7 which is indicative of a healthy stream ecosystem. The average number of EPT taxa was 16 which also indicated that the stream ecosystem integrity was excellent. No other water bodies were sampled.

Finding

Indicator 1: Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

MON-FOCAL-SPECIES-03: How is the abundance and distribution of invasive annual grasses (e.g. Bromus tectorum (cheatgrass)) changing over time?

Indicator 1: Spatial extent (acres) and cover (%).

Data source: Ecological Condition Monitoring Plots

Monitoring Results

Indicator 1: Due to staffing vacancies, no Ecological Condition Monitoring Plots have been surveyed since 2019. The most recent monitoring results were included in the 2020 Monitoring Report and are copied here. Invasive weeds have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Annual invasive plants present in meadows on the Bridgeport, Austin and Tonopah Districts include cheatgrass (*Bromus tectorum*), owl clover (*Orthocarpus spp.*), goosefoot (*Chenopodium spp.*), tumbled mustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), and shepardspurse (*Capsella bursa-pastoris*). Cheatgrass (*Bromus tectorum*) averages less than 1% cover in all plots surveyed.

One noxious plant species was found among locations monitored on the Toiyabe National Forest in 2016 and 2017. Bull thistle (*Cirsium vulgare*) is located in a mesic meadow community in the Tonopah District.

Invasive weeds continue to move and expand into disturbed meadow sites but have declined in meadows on the Bridgeport District that have been rested from grazing for several years. Invasives present in meadows on the Bridgeport, Austin and Tonopah Districts include cheatgrass (*Bromus tectorum*), wild iris (*Iris missouriensis*), dandelion (*Taraxacum officinale*), owl clover (*Orthocarpus spp.*), goosefoot (*Chenopodium spp.*), plantain (*Plantago spp.*), curly dock (*Rumex crispus*), tumbled mustard (*Sisymbrium altissimum*), false dandelion (*Tragopogon dubius*), shepardspurse (*Capsella bursa-pastoris*), wild rose (*Rosa woodsii*) and grey rabbitbrush (*Ericameria nauseosa*).

About 90 acres of mountain big sagebrush on the Bridgeport Ranger District burned in 2019. Monitoring post fire showed bare soil at 75% and litter at 14%. Russian thistle, a noxious weed, was growing in this site, which is of concern for the health of this area in the next few years. The Bridgeport District has one spring area that has low rooting depths and poor vegetative cover. There is a need to remove an existing trough out of this meadow and provide for seasonal rest in the spring source, meadow and surrounding area.

Finding

Indicator 1: No changes are needed. Although weed infestations are increasing on parts of the Toiyabe Planning Area, the Forest has been making efforts to control invasive plants. There is not enough information to determine changes in abundance or distribution of invasive annual grass cover.

Threatened and Endangered

MON-T&E-01: Are Forest management activities affecting recovery of T and E species?

Indicator 1: Host plant (Spatial extent - acres)

Data source: Forest GIS layers of surveyed habitat, designated Critical Habitat layers.
Ecological Condition Monitoring Plots

Indicator 2: Proximity to disease vector.

Data source: GPS locations of collared Sierra Nevada bighorn sheep (SNBS) provided by California Department of Fish and Wildlife in combination with Forest GIS layers of permitted sheep and goat allotments. Term grazing permits for allotments at a higher risk of contact are also reviewed.

Indicator 3: Watershed Restoration Action Plan and associated projects completed.

Data source: Data were identified by personal knowledge of the Forest Hydrologist, of projects completed on the Forest.

Indicator 4: Watershed condition indicators (Class) from the Watershed Condition Framework.

Data source: Data were retrieved from the US Forest Service Watershed Condition Assessment Tracking Tool (WCATT) database.

Indicator 5: Essential projects completed

Data source: Internal reports and completed Section 7 Consultations with the USFWS.

Monitoring Results

Indicator 1: The Mount Charleston blue butterfly (MCBB) is listed as an endangered species under the Endangered Species Act. Surveys and monitoring of suitable habitat for the species enables a relative assessment of the potential for presence of MCBB. Suitable habitat is composed of plants that serve as host plants for larvae development and as nectar plants for adult feeding. Two species of milkvetch and mountain oxytrope are known to serve as host plants. Currently approximately 5,200 acres are identified as Critical Habitat. Each year surveys are conducted in areas where habitat may be affected. In 2020, 139 acres were surveyed, and in 2021, three acres were surveyed. No substantial decreases in the spatial extent of host plants were noted and the extent appears stable.

Indicator 2: There is a need to assess and monitor the likelihood of contact between domestic sheep (and goats) and Sierra Nevada bighorn sheep (SNBS). The likelihood of contact plays a role in the risk of transmitting diseases to SNBS from domestic sheep in the Sierra Nevada. Diseases transmission between SNBS and domestic sheep could lead to the loss of entire bighorn sheep herds in the Sierra Nevada. Monitoring the implementation of the terms and conditions of sheep grazing permits in conjunction with tracking where SNBS occur, we can monitor relative risk of contact. No SNBS have been sighted in the Green Creek or Twin Lakes SNBS herd units, or north of a “trigger line”. The trigger line is a topographic boundary north of which, in consultation with US Fish and Wildlife Service, it has been determined that risk of contact between domestic sheep and SNBS is elevated, and adjusted management actions may need to occur. GPS tracking of SNBS have shown that the Green Creek and Twin Lake herd units are considered unoccupied. The closest known SNBS sighting to the trigger line is approximately two miles south. These sightings are associated with the Mount Warren Herd Unit.

Indicator 3/5: Indian Creek and Harris Springs Creek are priority watersheds on the Toiyabe NF. Two projects were implemented in the Harris Springs Creek watershed, channel treatments and closure of unauthorized roads. Weeds treatments were also conducted but are not yet finished.

Indicator 4: Data show 17 sub-watersheds are in a Functional condition, 246 sub-watersheds are in a Functional-at-Risk condition, and 16 sub-watersheds are in a Non-Functional condition. Most

watersheds were rated for functionality in 2011 during a rapid assessment which was based on available spatial data and professional judgement of resource specialists with on-the-ground knowledge of certain watershed conditions. A few watershed condition class ratings have been updated in the intervening years as new or better data became available. The two most common indicators rated individually as Non-Functional were Aquatic Habitat and Riparian/ Wetland Vegetation with 71% and 67% of watersheds being rated as Non-Functional for these indicators, respectively. No changes to any watershed conditions have been recorded since the last report.

Indicator 5: The Forest completed Endangered Species Act (ESA) Section 7 consultation for Bridgeport Southwest Range Management project for Sierra Nevada bighorn sheep, Yosemite toad, and Sierra Nevada yellow-legged frog. The determination found that these actions may affect and are likely adversely affect all three species. The Forest completed ESA Section 7 consultation for grazing activities occurring on the Austin-Tonopah Ranger District for Lahontan cutthroat trout (LCT). The determination was that these actions would adversely affect LCT. In addition, Section 7 consultation was also completed for the Lee Canyon Ski Area Master Development Plan – Phase 1 (likely to adversely affect Mount Charleston blue butterfly). The Forest completed implementation of the Sardine- Cloudburst Meadow Restoration project. The determination was that this action would adversely affect Yosemite toad in the short term but offer a long term of improved meadow function in the long term. In 2021 Yosemite toad were documented breeding within the restoration area in Upper Sardine.

Specific recovery efforts are ongoing to recover Threatened and Endangered species. These include: eDNA collection within Paiute cutthroat trout (PCT) habitat, and reintroduction of PCT into their historic range; non-native trout removal from Silver Creek; mark and recapture studies of Yosemite toad; non-native trout removal from the Sister Lakes for recovery of Sierra Nevada yellow-legged frog; and restoration of two Yosemite toad breeding meadows.

Finding

Indicator 1 and 2: No changes are needed. Mount Charleston blue butterfly host plant extent does not appear to be decreasing and areas of higher relative risk of contact are not occupied by Sierra Nevada bighorn sheep.

Indicator 3: Does not indicate a need for change of the Toiyabe National Forest Plan.

Indicator 4: Because the watershed classification data which are available to inform MON-WTRSHD-01 Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that watershed condition assessments will be updated in 2024 and include all watersheds. While current watershed condition data (i.e., 88% of watersheds rated as Functional-at-Risk and 6% rated as Non-Functional) seem to indicate a need for changing either the Toiyabe National Forest Plan or management within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need.

Indicator 5: Monitoring has not indicated a need for change of the Toiyabe National Forest Plan.

Recreation

MON-REC-01: Is the Forest's developed recreation program meeting visitor needs and providing for public health and safety at Forest facilities?

Indicator 1: Percent Meets Expectations in Developed Sites for developed facilities, access, services, and perception of safety

Indicator 2: Percent Participation in recreation activities in developed facilities or in developed sites/acres

Data Source: National Visitor Use Monitoring, Frequency: 5 years

Indicator 3: Number of passing and failing tests per water system

Data Source: Infra/NRM, District Files, <https://ndwis.ndep.nv.gov/DWW/>, <https://sdwis.waterboards.ca.gov/PDWW/> Frequency: 1 year

Indicator 4: Number of public water systems (ex. campground, picnic site) decommissioned/removed

Data Source: Infra/NRM, Frequency: 1 year

Indicator 5: Number of annual skier days

Indicator 6: Annual percent occupied sites in concessionaire campgrounds and picnic areas

Data Source: Special Use Permit Files, Frequency: 1 year

Monitoring Result

Indicator 1: National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest and the Toiyabe National Forest; rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, Forest visitors both on the SMNRA and the rest of the HTNF report that developed recreation sites meet their expectations to a very high degree. Recreation users have between 87.8 and 98.3 percent satisfaction rate with developed facilities, access, services, and feeling of safety at the Forest's developed sites.

The Forest participated in Round 5 of the NVUM program during FY2021, with data collected from sites across the forest. However, updated NVUM data was not available as of the date of this monitoring report and will be reported during the next monitoring report cycle in 2024.

Indicator 2: At developed sites on the SMNRA in FY2016, visitors participated most in Nature Center Activities (15.0 percent) and Picnicking (15.6 percent), and least in Resort Use (2.2 percent). On the rest of the HTNF, visitors participated most in Downhill Skiing (21.1 percent) in developed sites and least in Visiting Historic Sites (0.5 percent).

The Forest participated in Round 5 of the NVUM program during FY2021, with data collected from sites across the forest. However, updated NVUM data was not available as of the date of this monitoring report and will be reported during the next monitoring report cycle in 2024.

Indicator 3: On the Toiyabe NF in FY2020, pass/fail data was available for 9 of 18 water systems (50 percent). There were 105 passing tests (94.6 percent) and 6 (5.4 percent) failing tests (total coliform present).

In FY2021 on the Toiyabe NF, pass/fail data was available for 14 of 18 water systems (78 percent). There were 141 (86 percent) passing tests and 23 (14 percent) failing tests (total coliform present).

Indicator 4: In 2000, there were 23 active water systems on the Toiyabe NF. There were 18 water systems managed on the Toiyabe NF as of the last monitoring report in 2018. No changes to the number of water systems occurred in FY2020 or FY2021, and no water systems were decommissioned during this monitoring period.

Indicator 5: The following table list skier days reported in the HTNF special uses databases for the 2019/2020, 2020/2021, and 2021/2022 winter ski seasons.

Resort Name	District	2019/2020* Skier Days	2020/2021 Skier Days	2021/2022** Skier Days
Mt. Rose	Carson Ranger District	204,964	264,000	TBD
Lee Canyon	SMNRA	54,969	76,297	TBD

*Both Mt. Rose and Lee Canyon ski resort closed early on March 15, 2020, due to public health and safety directives as a result of the COVID-19 pandemic. The resorts did not reopen again for the remainder of the 2019/2020 winter season, resulting in lower-than-average skier days.

**Skier days for 2021/2022 at Mt. Rose and Lee Canyon were not available at the time of this report as the ski season has not concluded.

Indicator 6: According to Special Use Permit files there was no substantive change in the occupation rates at concessionaire operated campgrounds and picnic areas from 2020 to 2021. This indicates that the Forest’s developed recreation program’s ability to meet visitor needs and provide for public health and safety at Forest facilities has not changed during this brief time.

Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a 1-year frequency and with NVUM data reported on a 5-year frequency. However, NVUM data from the FY2021 data collection period was not available for review or use at the time of this 2022 Monitoring Report. Data from the FY2021 NVUM will be available for reporting in the 2024 Monitoring Report, with the next round of data collection scheduled for FY2026.

MON-REC-02: Is the Forest’s dispersed recreation program meeting visitor needs?

Indicator 1: Percent Meets Expectations in Undeveloped Areas (General Forest Areas, GFAs) for developed facilities, access, services and perception of safety

Data Source: National Visitor Use Monitoring, Frequency: 5 years

Indicator 2: Percent Participation in recreation activities outside of developed facilities

Data Source: National Visitor Use Monitoring, Frequency: 5 years

Indicator 3: Trail miles maintained to standard

Data Source: Infra/NRM, Frequency: 1 year

Indicator 4: Trail miles improved to standard

Data Source: Infra/NRM, Frequency: 1 year

Indicator 5: Miles of new trail constructed

Data Source: Infra/NRM, Frequency: 1 year

Indicator 5 is recommended for removal from the monitoring program. Miles of trail constructed is a component of Trail miles improved to standard in annual accomplishment reporting in the Trails Infra module of NRM.

Indicator 6: Trail miles meeting standard

Data Source: Infra/NRM, Frequency: 1 year

Monitoring Result

Indicator 1: National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest and the Toiyabe National Forest; rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors to undeveloped areas on the SMNRA feel that access, services, and feeling of safety met their expectations relatively well (between 82.6 and 88.2 percent). However, visitors to undeveloped areas are disappointed with developed facilities, with only a 26.7 percent rate of expectations met. Across the HTNF, visitors to undeveloped areas feel that developed facilities, access, services, and feeling of safety meet their expectations relatively well, between 83.9 percent for developed facilities and 99.9 percent for feeling of safety.

The Forest participated in Round 5 of the NVUM program during FY2021, with data collected from sites across the forest. However, updated NVUM data was not available as of the date of this monitoring report and will be reported during the next monitoring report cycle in 2024.

Indicator 2: Outside of developed facilities across the Forest, the activities that people participate in the most are as follows:

Activity	SMNRA	HTNF outside SMNRA
Hiking/Walking	62.5%	58.7%
Viewing Natural Features	48.7%	28.5%
Viewing Wildlife	42.1%	21.1%
Relaxing	31.4%	12.4%
Driving for Pleasure	25.3%	10.8%

Indicator 3: In FY2020, two districts on the Toiyabe NF reported having completed trail maintenance totaling 130.1 miles maintained to standard. In FY2021, four districts reported having completed trail maintenance to standard on 314.7 miles of trail on the Toiyabe NF.

Indicator 4: In FY2020, one district on the Toiyabe NF reported having completed trail improvements to standard on 0.7 miles of trail. In FY2021, one district reported having completed trail improvements to standard on 0.25 miles of trail on the Toiyabe NF.

Indicator 5: This indicator is recommended for removal from the monitoring program. This indicator is redundant with Indicator 4 “Trail miles improved to standard” in annual accomplishment reporting in the Trails Infra module of NRM.

Indicator 6: In FY2020, one district on the Toiyabe NF reported having trail miles meeting standard, at 149.5 miles. In FY2021, one district reported having 305.1 trail miles meeting standard on the Toiyabe NF.

Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a 1-year frequency and with NVUM data reported on a 5-year frequency. However, NVUM data from the FY2021 data collection period was not available for review or use at the time of this 2022 Monitoring Report. Data from the FY2021 NVUM will be available for reporting in the 2024 Monitoring Report, with the next round of data collection scheduled for FY2026.

Monitoring has indicated a need to change the monitoring program. Indicator #5 (MON-REC-02-05: Miles of new trail constructed) should be removed from the monitoring program. Indicator #4 (MON-REC-02-04: Trail miles improved to standard), in its format for annual accomplishment reporting in the Trails Infra NRM module, incorporates miles of new construction into the definition of miles improved. Indicator #5 is redundant.

MON-REC-03: Do visitors have safe and sufficient access to recreational opportunities and other areas of interest around the Forest?

Indicator 1: Percent Meets Expectations in Developed Sites, Undeveloped Areas (GFAs) and Designated Wilderness for Access

Data Source: National Visitor Use Monitoring, Frequency: 5 years

Indicator 2: Miles of system or non-system roads decommissioned

Data Source: Infra/NRM (gPAS), Frequency: 1 year

Indicator 3: Miles of high clearance road maintained

Data Source: Infra/NRM (gPAS), Frequency: 1 year

Indicator 4: Miles of high clearance road improved, constructed or reconstructed

Data Source: Infra/NRM (gPAS), Frequency: 1 year

Indicator 5: Miles of passenger car road maintained

Data Source: Infra/NRM (gPAS), Frequency: 1 year

Indicator 6: Miles of passenger car road improved, constructed or reconstructed

Data Source: Infra/NRM (gPAS), Frequency: 1 year

Monitoring Result:

Indicator 1: National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest and the Toiyabe National Forest; rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors felt that access to developed sites, undeveloped areas and designated wilderness met their expectations relatively well, from 82.7 to 90.6 percent on the SMNRA and from 88.9 to 94.2 percent on the rest of the HTNF.

The Forest participated in Round 5 of the NVUM program during FY2021, with data collected from sites across the forest. However, updated NVUM data was not available as of the date of this monitoring report and will be reported during the next monitoring report cycle in 2024.

Indicator 2: There were no miles of road reported as having been decommissioned in FY2020 and FY2021 on the HTNF.

Indicator 3: In FY2020, 181.5 miles of high clearance road were reported as having been maintained on the HTNF. In FY2021, 63.7 miles of high clearance road were reported as having been maintained on the HTNF.

Indicator 4: No miles of high clearance road were reported as having been improved, constructed, or reconstructed on the HTNF in FY2020. In FY2021, 6.3 miles of high clearance road were reported as having been improved, constructed, or reconstruction on the HTNF.

Indicator 5: In FY2020, 152.9 miles of passenger car road were reported as having been maintained on the HTNF. In FY2021, 144.1 miles of passenger car road were reported as having been maintained on the HTNF.

Indicator 6: No miles of passenger car road were reported as having been improved, constructed or reconstructed on the HTNF in FY2020. In FY2021, 4.7 miles of passenger car road were reported as having been improved, constructed or reconstructed on the HTNF.

Finding

This monitoring question and its indicators are designed to assess trends over time and compare data reported with a 1-year frequency and with NVUM data reported on a 5-year frequency. However, NVUM data from the FY2021 data collection period was not available for review or use at the time of this 2022 Monitoring Report. Data from the FY2021 NVUM will be available for reporting in the 2024 Monitoring Report, with the next round of data collection scheduled for FY2026.

Wilderness

MON-WILD-01: How is wilderness character being preserved on wilderness areas across the Forest? Is fire being allowed to maintain its natural role as an ecosystem component within wilderness?

Indicator 1: Percent Meets Expectations in Designated Wilderness for developed facilities, access, services and perception of safety

Data Source: National Visitor Use Monitoring, Frequency: 5 years

Indicator 2: Scores on Wilderness Stewardship Performance per wilderness, per element

Data Source: Infra/NRM, Frequency: 1 year

Indicator 3: Number of authorized (emergency vs. planned with MRDG) and known unauthorized motorized/mechanized incursions

Data Source: Infra/NRM, Frequency: 1 year

Indicator 4: Number and acres of wildland fires in wilderness managed at less than full suppression to achieve land and resource management objectives (demonstrating an increasing trend over time of allowing wildland fires in wilderness to be managed as opposed to being fully suppressed)

Data for this indicator is not available for the 2018 Biennial Monitoring reports because of vacancies the Fire Planning Staff Position.

Indicator 5: Number and acres treated by managing wildland fires in wilderness at less than full suppression to achieve land and resource management objectives (demonstrating an increasing trend over time of allowing wildland fires in wilderness to be managed as opposed to being fully suppressed)

Data for this indicator is not available for the 2018 Biennial Monitoring reports because of vacancies the Fire Planning Staff Position.

Monitoring Result

Indicator 1: National Visitor Use Monitoring (NVUM) data is collected and reported on a five-year cycle. Data is not broken down by the Humboldt National Forest and the Toiyabe National Forest; rather, data is shown either for the Spring Mountains National Recreation Area (SMNRA), or for the rest of the Humboldt-Toiyabe National Forest (HTNF) outside of the SMNRA.

Based on FY2016 NVUM data, visitors to designated wilderness on the SMNRA are moderately satisfied with the developed facilities, access, services, and feeling of safety they experience, ranging from developed facilities that meet their expectations at 64.9 percent to feeling of safety meeting expectations at 89.4 percent. Visitors to designated wilderness on the rest of the HTNF are more satisfied than those on the SMNRA, with a range of developed facilities meeting their expectations at 68.8 percent to feeling of safety that meets their expectations at 97.0 percent.

The Forest participated in Round 5 of the NVUM program during FY2021, with data collected from sites across the forest. However, updated NVUM data was not available as of the date of this monitoring report and will be reported during the next monitoring report cycle in 2024.

Indicator 2: Based on the INFRA/NRM data Wilderness Stewardship Performance Scores have increased slightly since the 2020 monitoring report. Out of the 110 points possible, the average Wilderness Stewardship Performance score for the 24 wilderness areas on the HTNF was 25 in FY2020 and 32 in FY2021. For the 12 wilderness areas located just on the Toiyabe NF, the average score was 26 in FY2020 and 36 in FY2021.

Indicator 3: The following table presents data from INFRA/NRM on authorized emergency and administrative incursions into wilderness on the HTNF during FY2020 and FY2021. The emergency incursions were primarily related to wildfire response.

Unit	FY2020		FY2021	
	Emergency	Administrative	Emergency	Administrative
Humboldt NF	5	0	2	0
Toiyabe NF	3	0	1	1
Total	8	0	3	1

No information was available regarding unauthorized motorized or mechanical intrusions into wilderness on the HTNF during FY2020 and FY2021.

Indicator 4: There were no fires managed at less than full suppression within wilderness during fiscal years 2020 and 2021 on the Toiyabe NF. All fires within wilderness were managed for full suppression.

Note: In 2020, The Chief issued direction for all fires to be managed for full suppression in light of on-going drought and the effects of the COVID-19 pandemic. These conditions continued into 2021.

Indicator 5: There were no acres treated by managing wildland fires in wilderness at less than full suppression to achieve land and resource management objectives in 2020 and 2021 on the Toiyabe NF.

Note: In 2020, The Chief issued direction for all fires to be managed for full suppression in light of on-going drought and the effects of the COVID-19 pandemic. These conditions continued into 2021.

Finding

Monitoring has not indicated a need to change the forest plan, to change management activities, to change the monitoring program, or to conduct an assessment to determine preliminary need to change the plan. This monitoring question and its indicators are designed to assess trends over time and compare data reported with a 1-year frequency and with NVUM data reported on a 5-year frequency. However, NVUM data from the FY2021 data collection period was not available for review or use at the time of this 2022 Monitoring Report. Data from the FY2021 NVUM will be available for reporting in the 2024 Monitoring Report, with the next round of data collection scheduled for FY2026.

Cultural Resources

MON-CULT-01: Is there active enhancement and interpretation of historic properties eligible for the National Register of Historic Places that will encourage public interest?

Indicator 1: Number of Register-eligible sites interpreted (e.g. graphics, tours, etc.)

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

Indicator 2: Number of Register-eligible sites enhanced (adaptive reuse or sustainable use of eligible properties).

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

Monitoring Results

Indicator 1 and 2: The available data lacks the accuracy to produce valid monitoring currently. The 2024 Monitoring report will be able to provide information related to this Monitoring question.

Finding

Available data not valid for monitoring purposes. The 2024 Monitoring report will include data relevant to this monitoring question.

MON-CULT-02: Are significant properties being evaluated for eligibility to the National Register and nominated to the register if eligible? Are these resources being protected?

Indicator 1: Number of significant properties evaluated to the National Register?

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

Indicator 2: Number of eligible significant properties being adversely impacted by federal undertakings, looting, environmental disturbance, and other actions.

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

Monitoring Results

Indicator 1 and 2: The available data lacks the accuracy to produce valid monitoring at this time. The 2024 Monitoring report will include data relevant to this monitoring question.

Finding

Available data not valid for monitoring purposes. The 2024 Monitoring report will include data relevant to this monitoring question.

MON-CULT-03: What is the Forest's progress in achieving a forest-wide cultural resource inventory?

Indicator 1: Number of acres previously not inventoried, and number of newly discovered historic properties recorded.

Data source: Heritage INFRA data via the Heritage Application (old and new) and GIS.

Monitoring Results

Five newly discovered historic properties recorded. 15,9 percent of the Forest was subject to varying levels of cultural resource inventory.

Finding

With only one data point there is insufficient information to base a finding. 15.9 percent of the Forest was subject to varying levels of cultural resource inventory. The inconsistencies between

the Humboldt NF and the Toiyabe NF Cultural Resources Monitoring Programs there is a need to change the two monitoring programs to make them consistent.

Climate

MON-CLIM-01: How is climate change altering patterns of recreational activities and visitor use on the Forest?

Indicator 1: Number of open/operational days at winter recreation sites and services (i.e. Ruby Mountains Heli-Ski, ski resorts, SMNRA winter use/snow play permit).

Data Source: District records, internet search, Frequency: 1 year

Indicator 2: NRCS Basin Index (Percent Median) monthly snowpack for each basin in Nevada for each winter season (October through May)

Data source: data were retrieved from the NRCS Snow Survey Program's online database.

Monitoring Results

Indicator 1: On the Toiyabe NF, operational days for the Foxtail Snowplay recreation special use permit is recommended for removal from the monitoring program. The holder's permit does not include a requirement of reporting number of operational days to the Forest Service. Additionally, the snow play permit area did not operate in FY2020 and FY2021 due to snow conditions and the COVID-19 pandemic (FY2021).

Data for the open/operational periods for the Bridgeport Winter Recreation Area, Lee Canyon Ski Resort, and Mt. Rose Ski Resort is provided below. Note that the 2019/2020 closing dates of March 15, 2020, was due to health and safety reasons in light of the global COVID-19 pandemic.

Area Name	Winter Season 2019/2020	Winter Season 2020/2021	Winter Season 2021/2022
Bridgeport Winter Recreation Area	~78 days (12/28/19 – 3/15/20)	90 days (1/5/21 – 4/25/21)	129 days (12/4/21 – 4/12/21)
Lee Canyon Ski Resort	91 days (12/14/19 – 3/15/20)	134 days (12/11/20 – 4/25/21)	106 days (12/17/21 – 4/3/22)
Mt. Rose Ski Resort	140 days (10/25/19 – 3/15/20)	148 days (11/10/20 – 4/8/21)	127 days (12/10/21 – 4/17/22)

Indicator 2: Water year 2018 (October 1, 2017 – September 30, 2018) was well below median snowpacks throughout the planning area until a series of storms in March added to the existing snowpack. April snowpack throughout the area was still around 60 percent long term medians. Water year 2019 (October 1, 2018 – September 30, 2019) was another record setting season with nearly double the median snowpack throughout the sierras. Note: The snow monitoring sites collected enough long-term data to begin reporting percent median snowpack on March 1, 2020.

Finding

Indicator 1: Monitoring does not indicate a need for change. Operational days for the ski areas and BWRA were within normal operating parameters. Early season closing dates in FY2020 were due to the global COVID-19 pandemic and not a result of climatic conditions.

Monitoring has indicated a need to change the monitoring program. Components of **Indicator 1: Number of open/operational days at winter recreation sites and services**, should be removed from the monitoring program. On the Toiyabe NF, permittee reporting at the end of their season for the Foxtail Snowplay recreation special use permit does not include a requirement of reporting number of operational days to the Forest Service.

Indicator 2: Does not indicate a need for change of the Toiyabe National Forest Plan.

MON-CLIM-02: How do recent temperature and precipitation trends (1-5 years) compare to long term averages (30+ years)?

Indicator 1: Monthly/ annual precipitation totals, max snow water equivalent, number of days with snow cover, meltout date, monthly/ annual temperature statistics.

Data source: Indicator 1 temperature and precipitation data were retrieved from the Desert Research Institute (DRI) Western Regional Climate Center (WRCC), whereas snow water equivalent (SWE) and associated snow parameters along with precipitation data were retrieved from the USDA Natural Resources Conservation Service (NRCS) Nevada Water Supply Outlook Reports which are based on parameters collected as part of the Snotel network.

Monitoring Results

Indicator 1: Overall precipitation throughout the fall, winter, and spring was below the 30-year median (1981-2010 for 2020 and 2021, 1991-2020 for 2022) for 2020-2022. Near average (i.e. 100% of median) months were observed in December 2019, March 2020, April 2020 and January 2021. Above average months were observed in October 2021, December 2021, and April 2022. Water year (October 1-September 30) to date precipitation in May 2020 and May 2021 was below average, while May 2021 was about average.

Snow water equivalent (SWE) was below or well below average in May 2020-2022 representing consecutive years of drought cycles. Below average SWE also represents reduced snow cover days and potential earlier melt out dates when coupled with warmer temperatures. According to the WRCC, annual temperature departures in 2020 and 2021 were above normal with warmer than usual temperatures being recorded. To date similar temperature patterns have been observed in 2022.

Finding

Indicator 1: Does not indicate a need for change of the Toiyabe National Forest Plan.

MON-CLIM-03: How do recent stream discharge trends (1-5 years) compare to long term averages (30+ years)?

Indicator 1: Total annual discharge data from USGS gaging stations.

Data source: Indicator #1 data were retrieved from the USDA NRCS Nevada Water Supply Outlook Reports, US Geological Survey (USGS) stream gage data and WaterWatch.

Monitoring Results

Indicator 1: Drier conditions have resulted in less precipitation and snowpack in the planning area which has in turn led to less overall discharge. As expected, and reflected in USGS gage data, the reduced snowpack and increases in temperature have resulted in earlier and smaller peak flows than normal. The USGS WaterWatch for water year 2020 reflected computed runoff in much of the planning area in the 25 to 75 percentile range with some areas as low as the 10 to 24 percentile range, and areas of southern Nevada in the 76 to >90 percentile range. In addition, the May 2020-2022 Water Supply Outlook Reports predicted average to below average stream flows from May through July.

Finding

Indicator 1: Does not indicate a need for change of the Toiyabe National Forest Plan.

Wild Horse and Burro

MON-WHB-01: What are the actual or estimated numbers of wild horses and burros (compared to AML where set)?

Indicator 1: Census or modeled data for population size.

Data source: **Little Fish Lake and Spring Mountains Complex (Johnnie, Red Rock and Spring Mountain WHBTs):** data comes from 2021 aerial surveys plus the addition of a 20% annual herd growth rate to include the 2022 foal crop. Johnnie WHBT population accounts for horses removed during the 2021 Mt Stirling emergency gather.

Remaining Territories: Population data comes from preliminary results of 2017 survey flights plus the addition of an annual 20% growth rate.

Wild Horse and Burro Territory	AML	2022
BUTLER BASIN	60-100 Horses	194 Horses
DOBBIN SUMMIT	1-3 Horses*	10 Horses
HICKISON	16 Burros	85 Burros
JOHNNIE	0-3 Horses 14-34 Burros	140 Horses 339 Burros
KELLY CREEK	8-16 Horses*	117 Horses
LITTLE FISH LAKE	93 Horses	184 Horses

Wild Horse and Burro Territory	AML	2022
MONITOR	51-90 Horses*	150 Horses
NORTHUMBERLAND	12 Horses	48 Horses
POWELL MOUNTAIN	29 Horses	52 Horses
RED ROCK	0-3 Horses 0-3 Burros	10 Horses 10 Burros
SEVEN MILE	1-3 Horses*	10 Horses
SPRING MOUNTAIN	47-66 Horses 20-35 Burros	74 Horses 169 Burros
STONE CABIN	1-3 Horses*	1 Horse
TOQUIMA	15-30 Horses*	102 Horses
*No AML Established. Numbers presented here are estimate of proper number		

Monitoring Results

Most of these territories are adjacent to Bureau of Land Management Herd Management Areas and horse and burros move back and forth between jurisdictions. Numbers in the table are total for the joint management areas.

Finding

Toiyabe National Forest WHBTs are 300% over maximum AML resulting in many areas with deteriorating range conditions and damage to springs. Emergency gathers due to lack of forage and water occur regularly. Overpopulation and lack of resources are leading horses and burros to leave territories and spread to other areas. There is a need to change management so that horse and burro populations can be managed within AML.

Multiple Use

MON-MULTI-01: What are the economic conditions in local communities that could affect the impact of forest contributions to local economies?

Indicator 1: Economic health: unemployment (%); household earnings; per-capita income; and source of income (%).

Indicator 2: Number of employed personnel resulting from exploration and mining permitting, leasing and mineral material permitting.

Indicator 3: Economic diversity: employment diversity index; employment projections by occupation (% change); number of local businesses, employees, and average salaries in forest related sectors.

Data source: <https://headwaterseconomics.org/> Socioeconomic report

Monitoring Results

The percent unemployment fluctuated between 2017 and 2020. The lowest monthly unemployment was in November 2019 and the highest being April 2020 in Clark County at 14.1%. April 2020 coincided with the height of the Covid 19 pandemic.

Douglas County experienced the highest per capita income in 2018 and again in 2020 and Nye County being the lowest.

Mining employment was up by nearly 30,000 jobs between 2017 and 2019, with the highest increase in Clark County. In 2019, Eureka County had the largest percent of total jobs in mining industry. The percent of annual average salaries for agriculture, forestry, fishing and hunting increased between 2018-2020 for all counties.

Finding

Given that this is the third year of monitoring, recommend no changes to the forest plan, forest management and re-evaluate once several more years of data is available.

MON-MULTI-02: What economic contributions are forest-based recreation, forest products, mining and grazing making to local communities?

Indicator 1: Conditions in forest-based sectors: forest-related sector employment (jobs); forest-related sector wages (annual salary); and employment and earnings from travel and tourism (by county).

Data source: <https://headwaterseconomics.org/> Tourism, Mining, Timber Report

Monitoring Results

According to headwaters travel and tourism report Locations with economies that focus on travel and tourism may have a competitive advantage but can also be sensitive to business cycles and other changes (for example, a rise in fuel costs) that affect pleasure travel and recreation spending. Natural amenities such as public lands can increase travel and tourism activities, benefiting local communities and in some cases diversify rural economies that have historically been tied to commodity production. The growth of travel and tourism activities is also associated with in-migration that can lead to business relocation and new business development across a range of business sectors.

In some locations, travel and tourism are significant drivers of the economy. This can be true for "resort" economies but also for areas that have abundant natural and social amenities and offer recreational opportunities. In some of these places, travel and tourism-related employment is growing faster than overall employment. While pleasure travel and recreation are important economic activities in and of themselves, they also stimulate other forms of economic

development when people move families and businesses to communities they first visited as tourists.

The percent of private employment in travel and tourism saw slight increase between 2018-2020 with the exception of Alpine and Mono County which saw an approximately 4% decrease. Even with the decrease, Mono remains having the largest percent of total travel and tourism at 58%.

The percent of private employment timber jobs remained relatively unchanged between 2018 and 2020, with the largest decrease of 3% in Mono County, California. The percent private employment in mining between 2018-2020 remained unchanged across most counties with slight decrease in Mono County and Alpine County, California.

Finding

No change in Plan direction is indicated at this time.

MON-MULTI-03: Are Forest boundary adjusted to consolidate ownership and improve public access?

Indicator 1: Acres of acquired land or miles of right of way acquired

Data source: Lands adjustments database (LADS).

Monitoring Results

The forest acquired parcels during the 2020-2022 monitoring period. The Azevedo property was acquired in fiscal year 2021 with Forest Service administrative access. The property consists of 448.36 acres. The Mountain Springs property was acquired in fiscal year FY2021 and consists of 20.59 acres with public access. No rights-of-way were acquired during the monitoring period.

Finding

No change in Plan direction is indicated at this time.

Fire

MON-Fire -01: How is fire and fuels management being used for resource benefit?

Indicator 1: Acres of hazardous fuels reduction in WUI and non-WUI, Change in seral state, Changes in FRCC

Data source: Corporate Data Warehouse – FACTS

Monitoring Results

In 2020 and 2021 forest fuels treatments totaled 49,386 acres (9,546 and 39,840 acres respectively). This represents a continued increase in the number of treatments over the last 5 years. Approximately 2/3 of the treatments were conducted outside of the WUI, while 1/3 was done in the WUI. These values were attributed to treatments within pinyon/juniper types for sage brush ecosystem management. In addition, approximately 925 acres were treated using prescribed fire, which accounts for ~2% of the treatment accomplished. In addition, lightning fire contributed towards approximately 41% of fuels treatments that met desired conditions for fuels reduction and re-introduced fire as an ecosystem process. Fuels treatments across the forest

contributed towards an improvement in FRCC as reported in the FACTS database. Treatment amounts over 2020 and 2021 are towards the higher end of the forest 5-year range of acres treated annually while prescribed burning amounts were within the median values for burning.

Finding

Fire and fuels management is occurring within the WUI and outside of the WUI to meet multiple resource objectives. Landscape treatments meet fuels reduction goals across multiple land allocations.

MON-FIRE-02: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)? Is the management of wildland fires accomplishing protection objectives for important Values at Risk (VAR)?

Indicator 1: Acres of hazardous fuels reduction in WUI and non-WUI.

Data source: Corporate Data Warehouse – FACTS, and Firestat

Monitoring Results

There were 114 wildland fires reported in 2020 to 2021 in the Firestat database. Of this amount 76 were natural and 38 were human caused. These totaled 50,979 acres burned broken down by 47,712 acres of natural ignitions and 3,266 acres of fire caused by humans. All wildland fires that burned past initial attack phase identified VARs according to the WFDSS process. Protection objectives, resource objectives or a combination of both would be identified according to the physical setting of the wildland fire and the corresponding forest plan direction (eg wilderness or non-wilderness). In addition, the suppression strategy would vary on all fires which is consistent with the WFDSS decision making process for managing all wildland fires.

Finding:

It is recommended that this monitoring question be dropped from the monitoring plan because all wildland fires are managed to meet identified objectives from the WFDSS. Based on the uncertainty of where and when wildfires would occur in any given year it would be difficult to identify a trend in loss to VARs as well as how suppression strategies vary from year to year. The Forest will continue to follow policy under the forest plan, WFDSS, and Forest Service Handbook direction for managing wildfires for multiple objectives while protecting VARs.

DETERMINATIONS FROM THE BIENNIAL EVALUATION

Based on evaluations that were conducted, the following are the determinations for adaptive management, per 36 CFR 219.12(d)(2):

Need for Changing the Forest Plan

MON-SOIL-01, Indicator 5: Seems to indicate a need for changing management within the planning area. In FY17, the BMP implementation and effectiveness of two activities with the

potential to impact soil resources were monitored. Both resulted in a “Poor” composite score. Unchanged from 2020 Monitoring Report.

Need for Changing the Monitoring Program

Monitoring has indicated a need for to change several of the monitoring questions/indicators to provide better monitoring data.

Mon-Veg-Cond-01: What changes have occurred to landscape scale vegetative community types? Need to change the number and frequency of monitoring plots. This can be done outside the administrative process. There is a need to remove sagebrush, whitebark and bristlecone pine from the list of indicators to be monitored. These species are poor indicators of management action or the need for change in strategies. This need has not changed since the 2020 report.

MON-REC-02, Indicator 5: Miles of new trail constructed) should be removed from the monitoring program. **Indicator #4: Trail miles improved to standard,** in its format for annual accomplishment reporting in the Trails Infra NRM module, incorporates miles of new construction into the definition of miles improved. Indicator #5 is redundant.

MON-CULT-03: With the inconsistencies between the Humboldt NF and the Toiyabe NF Cultural Resources Monitoring Programs there is a need to change the two monitoring programs to make them consistent.

MON-CLIM-01, Indicator 1: Number of open/operational days at winter recreation sites and services, should be removed from the monitoring program. On the TNF, permittee reporting at the end of their season for the Foxtail Snowplay recreation special use permit does not include a requirement of reporting number of operational days to the Forest Service.

MON-FIRE-02: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the wildland-urban interface (WUI) and non-WUI)? Is the management of wildland fires accomplishing protection objectives for important Values at Risk (VAR)? It is recommended that this monitoring question be dropped from the monitoring plan because all wildland fires are managed to meet identified objectives from the WFDSS. Based on the uncertainty of where and when wildfires would occur in any given year it would be difficult to identify a trend in loss to VARs as well as how suppression strategies vary from year to year. Unchanged from 2020 Monitoring Report.

Need for Changing Management Activities

Mon-Soil-01, Indicator 5: Seems to indicate a need for changing management within the planning area. In FY17, the BMP implementation and effectiveness of two activities with the potential to impact soil resources were monitored. Both resulted in a “Poor”

composite score. **In 2020** BMP monitoring at the McWilliams CG on the SMNRA showed increased sheet erosion and deposition from a monsoon event. Recently installed channel culverts are beginning to flood. Continued monitoring of the channel is recommended.

Mon-Soil-02, Indicator 3: In the 2020 monitoring report data indicated that grazing BMPs in the North Murphy area of the Bridgeport Ranger District were mostly implemented, but not effective and that construction or maintenance BMPs at the Cathedral Rock Picnic Area (SMNRA) parking lot were not implemented and not effective. This indicates that the implementation of BMPs needed to be improved so that all BMPS are implemented as planned and effective. Unchanged from 2020 Monitoring Report.

MON-VEG-COND-01, Indicator 1: Changes in wetland vegetative communities where wild horses and burros (WHB) are present in active grazing allotments indicate a need to change site specific monitoring protocols. Increasing the number of monitoring plots and how often data is collected in a) areas where WHB and livestock grazing occur, b) where WHB exists without livestock grazing, and c) where WHB do not exist in active grazing allotments and analyzing for differences in changes to riparian and other wetland vegetative community types will provide a better understanding for need for change in management activities.

Mon-WHB-01: There is a need to change management so that horse and burro populations can be managed within AML.

Need for Conducting an Assessment to Determine Preliminary Need to Change the Plan

Mon-WTRSHD-01: Indicator 1: Because the watershed classification data which are available to inform Indicator #1 were primarily developed in 2011 during a rapid assessment, it would benefit the Forest if a more current and comprehensive assessment were completed of watershed condition. It is expected that additional targeted watershed condition assessments will occur in 2021 and that all watersheds will be reassessed in 2026 based on recent discussions. While current watershed condition data (i.e., 88% of watersheds rated as Functional-at-Risk and 6% rated as Non-Functional) seem to indicate a need for changing either the Toiyabe National Forest Plan or management within the planning area, such Plan or management changes should not be made unless improved assessment data show the same need. (This also applies to **Mon-TES-01, Indicator 4**)

About Our Forest Plan Monitoring Program

Roles and Responsibilities

The Forest Plan Monitoring Program requires a coordinated effort of many people, from the people who collect the data, to the people outside the Forest Service who provide feedback and assistance, to the decision maker.

Forest Supervisor William A. Dunkelberger is the responsible official for the forest plan and this report will be provided to him for his decision on the proposed changes, and changes to management direction to address deficiencies that are identified in the plan area. The monitoring report was prepared by the following Forest Employees.

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How Our Plan Monitoring Program Works

Monitoring and evaluation requirements have been established through the National Forest Management Act (NFMA) at 36 CFR 219. Additional direction is provided by the Forest Service in Chapter 30 – Monitoring – of the Land Management Handbook (FSH 1909.12).

The Toiyabe National Forest monitoring program was updated in April 2016 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Toiyabe National Forest Plan was administratively changed to include the updated monitoring

program (Chapter 5). For a copy of the current monitoring program go to https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd541251.pdf. Monitoring questions and indicators were selected to inform the management of resources on the plan area and not every plan component was determined necessary to track [36 CFR 219.12(a)(2)].

The monitoring evaluation implementation protocol (monitoring protocol) is part of the overall plan monitoring program and provides more specific direction for implementing the more strategic plan monitoring program and details monitoring methods, protocols, and roles and responsibilities. The Monitoring protocol is not part of the plan decision

and is subject to change as new science and methods emerge. The Toiyabe National Forest monitoring guide is available at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd541251.pdf.

Providing timely, accurate monitoring information to the responsible official and the public is a key requirement of the plan monitoring program. This summary, along with the full 2018 biennial monitoring evaluation report for the Toiyabe National Forest is the vehicle for disseminating this information.

In the context of forest planning there are three main monitoring goals:

- Are we implementing the Forest Plan implemented properly? Are we meeting our management targets and project guidelines? (implementation monitoring)

- Are we achieving our Forest Plan management goals and desired outcomes? (effectiveness monitoring)
- Does our hypothesis testing indicate we may need to change the Forest Plan? (validation monitoring)
- Implementation monitoring is important for tracking progress and accomplishments. However, it is effectiveness and validation monitoring that drive and support the adaptive management process. Effectiveness monitoring evaluates condition and trend relative to desired conditions. Validation monitoring tests hypotheses and provides information that might necessitate changes to desired conditions in the plan (e.g. is what we think the desired state should be accurate?)

NATIONAL DATABASES USED

The monitoring questions found in chapter five of the Toiyabe National Forest Land and Resource Management Plan have been updated in compliance with the 2012 Planning Rule. Tracking and monitoring results for most of these questions has now moved to National Databases.

Natural Resource Manager

Natural Resource Manager (NRM) is a national Forest Service organization that is responsible for coordinating software development activities for four application groups whose data are accessible through the NRM platform or the Enterprise Data Center (EDC):

- Forest Service Activity Tracking System (FACTS)
- Infra
- Natural Resource Information System (NRIS)
- Timber Information Manager (TIM)

These applications often intersect in how they collect and share data and in how they develop software and use technology. NRM finds ways to manage and grow these applications efficiently and has already begun to standardize the processes used to develop an integrated program of work. NRM also will be looking for effective ways to use resources to reduce duplication of effort and to maximize technology investments. There are future plans to provide a public-facing interface for some of the national datasets housed in NRM.

FACTS

The Forest Service Activity Tracking System (FACTS) is an activity tracking system for all levels of the Forest Service. It supports timber sales in conjunction with TIM Contracts and Permits; tracks and monitors NEPA decisions; tracks KV trust fund plans at the timber sale level, reporting at the National level; and it generates National, Regional, Forest, and/or District Reports.

INFRA

Infra is a collection of Web-based data entry forms, reporting tools, and GIS tools that enable Forests to manage and report accurate information about their inventory of constructed features and land units as well as the permits sold to the general public and to partners. This information is

used by Forest supervisors for the effective management of their Forests and also by visitors, partners, and Congress. Infra is a valuable tool for:

- Forest-level management
- Forest analysis, planning, and budgeting
- Implementing core data layers such as trails, roads, cultural properties, recreation, and range allotments
- Monitoring financial accountability; capitalization, depreciation and deferred maintenance
- Collecting partnerships information such as grants, agreements, and leases
- Collecting information to be made available to the public; data warehouse, Wilderness use permits, e-government
- Administering Forest permits and billings, such as Range and Special Uses

Infra also interfaces with several external systems to meet data sharing and financial reporting goals. Infra transmits daily feeds of permit billing and grant and agreement financial information to the Foundation Financial Information System (FFIS). Infra also transmits real property information to the UDSA's Corporate Property Automated Information System (CPAIS).

NRIS

The Natural Resource Information System (NRIS) combines a series of standard corporate databases and computer applications designed to support field-level users. NRIS databases contain basic natural resource and socio-economic data in standard formats built to run within the Forest Service computing environment. Some of the products available in NRIS include:

- Air Quality Information (AIR)
- Aquatic Surveys (AqS)
- FSVeg (Common Stand Exam, includes a geospatial component)
- Inventory and Mapping (Geology, Soils, etc.)
- National Visitor Use Monitoring (NVUM)
- Rangeland Inventory and Monitoring
- Threatened, Endangered, and Sensitive Plants
- Invasive Species
- Water Rights and Uses (WRU)
- Watershed Classification and Assessment Tracking Tool
- Watershed Improvement Tracking (WIT)
- Wildlife

Air

The Air application helps air resource managers analyze the effects of air pollutants on natural, cultural, and social resources on lands managed by the Forest Service.

Aquatic Surveys (AqS)

Aquatic Surveys (AqS) supports ecological and physical stream variables for three hierarchical levels of the riverine system on NFS lands: valley segments, stream reaches and channel units. Data collected about aquatic fauna communities (fish, invertebrates, macroinvertebrates, amphibians, reptiles) in streams, lakes and spring environments are supported.

Field Sampled Vegetation Spatial (FSVeg Spatial)

FSVeg Spatial manages spatial and tabular vegetation data in one place, at one time. It contains three types of data:

- The vegetation polygon feature class (required to use FSVeg Spatial),
- The vegetation point feature class, and
- Non-stand-exam vegetation data associated with the polygon feature class.
- NRM is working with units to move vegetation data from forests into the FSVeg Spatial application.

National Visitor Use Monitoring (NVUM)

National Visitor Use Monitoring (NVUM) software manages information gathered from on-site surveys of recreation visitors to lands managed by the Forest Service. For information about NVUM's statistical methodology, visit Recreation, Heritage & Wilderness Programs National Visitor Use Monitoring Program. Data collection is based on a stratified random sample methodology to develop sound estimates of visitor use, characteristics, satisfaction, and spending information for each national forest.

The NVUM Results software is now available to the public on the Internet. It delivers NVUM statistics at the national, regional and forest scales using 70 pre-defined reports and maps. Results from individual forests can be combined using the Results software to access multiple-forests, regional, and national estimates of the numbers and types of recreation visits. Reports are available for all years beginning with fiscal year 2005 (October 1, 2004 to September 31, 2005).

Rangeland Inventory and Monitoring

Rangeland Inventory and Monitoring supports national protocols for vegetation and ground cover sampling, general site characterization and detailed soil pedon descriptions. The application supports site characterization, interpretations and classifications; it also accommodates casual point observations with basic attributes.

National vegetation sampling protocols supported by the application include: Tree/Snag, Ocular Macroplot, Line Intercept, Cover Frequency, Nested Rooted Frequency, Robel Pole, Density, Paced Transect, Macroplot, Riparian Greenline–Winward, Riparian Cross Section–Winward, and Riparian Woody Regeneration–Winward. Rangeland Inventory and Monitoring is a spatial application intended for defined projects with formal protocol- or program-driven inventories.

Threatened, Endangered, and Sensitive Plants, and Invasive Species (TESP/IS)

TESP/IS support national data collection standards for combined TESP and invasive species surveys, TESP element-occurrences, and Invasive Species Inventories.

Water Rights and Uses (WRU)

Water Rights and Uses (WRU) tracks state and federally recognized water uses and related information regarding the water source, beneficial uses, quantity, and periods of water use. The application also tracks core information about water rights that may be associated to the water use and the legal and administrative actions that occur. Data collected during site visits to water use system components includes descriptions and dimensions of the water use system as well as site maps, reports and digital photographs. Integration with other Forest Service corporate applications including Automated Lands Project (ALP) and Infra are also supported to provide for a variety of integrated reports.

Watershed Classification and Assessment Tracking Tool (WCATT)

NRM developed the Watershed Classification and Assessment Tracking Tool (WCATT) application in support of the Watershed Condition Framework (WCF) to provide a nationally consistent approach for classifying watershed condition. The tool supports the entering, editing and reporting of classification and assessment data for watersheds that contain U.S. Forest Service lands. WCATT provides a Geographic Information System (GIS) approach to data input for tracking Watershed Classification by 12-digit hydrologic units by year. The Watershed, Fish, Wildlife, Air, and Rare Plants Directors area sponsor it.

WIT

Watershed Improvement Tracking (WIT) manages data, observations and planning details about sites that need to be (or have been) restored or improved with the intent of benefiting watershed and aquatic ecosystem health and function. The application is a watershed restoration activity tracker that addresses site conditions, administrative plans and actions, and outcomes. The primary users of WIT are biologists and hydrologists; however, the reporting products deliver raw or summarized information valuable for project leaders, program managers, and public relations staff.

Wildlife

Wildlife supports terrestrial animal observations and site inventories.

TIM

The Timber Information Manager (TIM) supports the business of managing Timber Sales, Salvage Sales, Stewardship Contracts, and Forest Products Permits on National Forest lands. While TIM is used to complete the resource job at the field-level, it simultaneously captures information for service-wide reporting needs. TIM is integrated with other national systems, such as FACTS and PALS for project data, National Cruise applications (for timber volume), FMMI for contacts and billing information, and ATSA for payments, interest, penalties, and contract bonding.

Reports for many of these metrics are available upon request.

Project Level Monitoring

The Forest Monitoring Team did not complete any project monitoring in FY 2015-2018. However, Forest-wide and district level project monitoring was conducted for most resources, including watershed, wildlife, and fire. Reports are available upon request.

MONITORING AND EVALUATION REPORT TIMING

The 2022 Monitoring and Evaluation report documents and discloses monitoring results from fiscal years 2020 through 2021. Each Forest Plan Monitoring and Evaluation report is intended to be a “living” document, meaning information displayed in the 2018 and 2020 report are considered as part of the 2022 report. Much of what is learned from monitoring and evaluation is based on how things evolve from year to year, rather than what is learned at a single point in time.