



United States Department of Agriculture  
Forest Service

# 2024 Biennial Monitoring and Evaluation Report

## Humboldt-Toiyabe National Forest Land and Resource Management Plan



June 2024



**For More Information Contact:**

Kendal Young  
Humboldt-Toiyabe National Forest  
1200 Franklin Way  
Sparks, NV 89431  
Phone: 775-276-4659  
Email: kendal.young@usda.gov

Crater Lake Meadow, Carson Ranger District, C. Howell.

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

---

---

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at [How to File a Program Discrimination Complaint](#) and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer, and lender.

## Summary of Findings and Results

The following table summarizes the results and recommendations of the 2024 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

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.

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? <sup>2</sup>
MON-Wtrshd-01) What water bodies are not meeting desired water quality conditions?	No	No	N/A
(MON-Wtrshd-02) How are physical terrestrial features effecting watershed conditions?	Yes	No	N/A
(MON-Wtrshd-03) What is the water permanence in different watersheds across the Forest and does this pose challenges for meeting desired conditions?	No	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? <sup>2</sup>
(MON-Wtrshd-04) How is watershed condition changing?	No (C)	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-Wtrshd-05) What current forest management strategies are effective in meeting or moving riparian areas towards potential/desired riparian conditions?	No (B)	No	N/A
(MON-TEC-01) What changes have occurred to landscape scale vegetative community types?	No (B)	Yes	There is a need to expand the weeds management program through aerial herbicide and other land management strategies to limit the expansion of annual grasses.
(MON-TEC-02) How are current allotment and territory management strategies effective in meeting or moving toward desired rangeland conditions?	Yes	No	N/A
(MON-TEC-03) What management actions are contributing to the achievement of desired conditions related to fire regimes?	Yes	Yes	There is a need to document acres of wildland fires that support resource objectives and contribute to the achievement of desired conditions. Post wildfire vegetation monitoring should be considered to better understand post fire vegetation conditions and recovery.

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? <sup>2</sup>
(MON-TEC-04) How are fire regimes changing relative to desired conditions and the historic range of variation?	Yes	No	N/A
MON-Soils-01) How are characteristics of soil health and productivity changing?	No (C)	No	N/A
(MON-Soils-02) How are management activities affecting soil health and productivity?	No (B)	Yes	Need to address BMP monitoring program and soil biological crust monitoring. Current data sources are insufficient in identifying whether management activities are negatively affecting soil health and productivity.
(MON-FOCAL-SPECIES-01) How is the abundance and distribution of <i>Populus tremuloides</i> (aspen) changing over time?	No	Yes	Need to readdress aspen monitoring program. We need to review previously used methods and decide if we want to use these in coming years or design new surveys to encompass overall stand health and provide information for aspen management.
(MON-FOCAL-SPECIES-02) What is the status of whitebark pine populations on the Forest?	No	Yes	Efforts to establish range wide management and monitoring of WBP are currently underway at the Regional level. Coupled with project level monitoring, more accurate information is expected. A change in data sources are likely to change.

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? <sup>2</sup>
(MON-FOCAL-SPECIES-03) How do aquatic communities indicate stream ecosystem integrity is being maintained?	Yes	No	N/A
(MON-FOCAL-SPECIES-04) How is the abundance and distribution of invasive annual grasses (e.g. Bromus tectorum (cheatgrass)) changing over time?	No	No	N/A
(MON-FOCAL-SPECIES-05) What management actions have contributed to the protection/enhancement or the degradation of important large ungulate migration corridors?	Yes	Yes	It will be more informative to bring in other data to get a clear picture of all the possible impacts/benefits to ungulate migration corridors. Suggest that roads, engineering, recreation, and minerals data should be added to the analysis. The current data used for this analysis likely is missing some other impacts to the habitat (i.e. new mine exploration, expanding recreation sites, widening/improving roads etc.) or improvements to migratory habitat (i.e. road decommissioning, etc.)
(MON-FOCAL-SPECIES-06) What management actions have contributed to the protection/enhancement or the degradation of important greater sage-grouse habitat (includes Bi-state sage-grouse)?	Uncertain (B)	Yes	It will be more informative to bring in other data to get a clear picture of all the possible impacts/benefits to sage-grouse habitat. Suggest that roads, engineering, recreation, and minerals data should be added to the analysis. The current data used for this analysis likely is missing

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? <sup>2</sup>
			<p>some other impacts to the habitat (i.e new mine exploration, expanding recreation sites, widening/improving roads etc.) or improvements to migratory habitat (i.e. road decommissioning, etc.).</p> <p>Additionally, it is suggested that Migratory birds are identified as a focal species moving forward. The Intermountain Region utilizes annual survey data (beginning in 2017) obtained via the Integrated Monitoring of Bird Conservation Regions (IMBCR) to obtain trend data on more than 200 species regionally and by specific Forests and provide annual reports. This data would provide an overall picture of how all migratory bird species are doing on the Forest, as well as help identify possible habitat quality issues that may need to be addressed through management (e.g. if most of the species associated with a particular habitat type are in decline).</p>

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? <sup>2</sup>
(MON-T&E-01) How are forest management strategies effecting ecological conditions that contribute to recovery of T & E species?	No	Yes	There is a need for forest plan revisions for the Humboldt and Toiyabe Forest Plans to provide consistency across the forest on appropriate annual streambank alteration limits on TES occupied stream banks and shorelines.
(MON-REC-01) Are developed recreation sites meeting the needs, desires, and expectations of visitors?	Yes	No	N/A
(MON-REC-02) To what extent are trails providing access to the activities as intended?	Yes	No	N/A
(MON-REC-03) Are system trails located and maintained to prevent resource degradation and to support allowable uses?	Yes	No	N/A
(MON-WILD-01) Are management activities improving wilderness character in our designated wilderness areas?	Yes	No	N/A
(MON-CULT-01) How is the Forest providing interpretive and educational opportunities to the public about cultural and historic resources?	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? <sup>2</sup>
(MON-CULT-02) What is the Forest's progress in achieving a forest-wide cultural resource inventory?	Yes	No	N/A
(MON-CULT-03) To what extent are management actions occurring to contribute to sustainability of cultural and historic resources?	Yes	No	N/A
(MON-MULTI-01) How has the Forest managed Water Rights across the Forest?	Yes	No	N/A
(MON-MULTI-02) How are forest products (food, fiber, biomass, fuel, freshwater, natural medicines, minerals, etc.) that are extracted from the HTNF helping the forest meet its multiple use mandate?	Yes	No	N/A
<sup>1</sup> 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). <sup>2</sup> see body of the report for more details regarding any specific recommendations/opportunities for change.			

Based on results of the monitoring program the Humboldt-Toiyabe National Forest Plans are working as intended. This monitoring report indicates a need to make minor changes to the Monitoring Program and one for the Plans themselves. There is no intention to make the changes prior to Forest Plan Revision. Problems often arise during project planning resulting from the age of the plan and absence of measurable plan level desired conditions and objectives. These issues will also be addressed during plan revision. While the 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.

---

---

## Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred from fiscal year 2022 through fiscal year 2024 on the Humboldt-Toiyabe National Forest (HTNF).

Over the last eight years, since 2016, six Biennial Monitoring Reports (one for each forest every two years) have been prepared. Those reports have consistently found that several monitoring questions needed to be changed to better reflect the effects land management practices have been having on the resources managed by the HTNF. In light of those findings, I asked my staff to develop monitoring questions that would address the needs identified in the previous reports and to review the 2012 Planning Rule to determine what information may be of the most value as the Forest moves toward Forest Plan Revision.

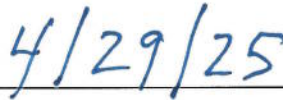
The 2024 Biennial Monitoring report combines the two reports previously submitted into a single report reflecting the results of monitoring across the entire Humboldt-Toiyabe National Forest. Producing a single report that reflects the land management activities across the entire forest will provide a more holistic picture of the effects of management activities and how the Forest is addressing changing ecological conditions.

This combined report reflects the changes to the HTNF monitoring program identified in the previous reports and includes additional monitoring questions that look at ecological conditions in watersheds, how management actions affect movement toward desired conditions, new focal species, and revised recreation/wilderness questions. I anticipate that the conditions the Monitoring Team provides in this and future reports will be used when we begin the Forest Plan Revision process.

The HTNF is currently on the National Revision schedule to begin the "pre-assessment phase in fiscal year 2025. As I considered the need for revision and the findings of the previous monitoring reports, I realized that it is way past time that the monitoring report begins to provide the information we will need to consider as we begin the revision process.

I have evaluated the monitoring and evaluation results presented in this report. I have examined the recommended changes and found that there are no recommended changes to the 1986 Land Management Plans at this time.

  
\_\_\_\_\_  
**Jon M. Stansfield**  
**Forest Supervisor**  
**Humboldt-Toiyabe National Forest**

  
\_\_\_\_\_  
**Date**



---

---

## Contents

Summary of Findings and Results.....	i
Forest Supervisor's Certification .....	viii
INTRODUCTION .....	1
Purpose .....	1
Objectives.....	1
How Our Plan Monitoring Program Works .....	2
Monitoring Objectives .....	2
How to Use this Report .....	2
MONITORING EVALUATION .....	3
Water .....	3
Soil.....	6
Vegetation.....	<b>Error! Bookmark not defined.</b>
Focal Species .....	23
Recreation .....	32
Wilderness.....	34
Cultural Resources .....	32
Wild Horse and Burro.....	<b>Error! Bookmark not defined.</b>
Multiple Use.....	37
Fire .....	<b>Error! Bookmark not defined.</b>
DETERMINATIONS FROM THE BIENNIAL EVALUATION.....	39
Need for Changing the Forest Plan .....	39
Need for Changing the Monitoring Program .....	39
Need for Changing Management Activities .....	40
Need for Conducting an Assessment to Determine Preliminary Need to Change the Plan .....	40
About Our Forest Plan Monitoring Program .....	40
Roles and Responsibilities.....	40
How Our Plan Monitoring Program Works .....	41
NATIONAL DATABASES USED .....	41
Introduction - Natural Resource Manager .....	42
MONITORING AND EVALUATION REPORT TIMING .....	45

## 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.  
Measurable changes on the plan area related to drought and other stressors that may be affecting the plan area.
6. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
7. 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: What water bodies are not meeting desired water quality conditions? (36 CFR 219.12(a)(5)(i))**

##### **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 and the Watershed Classification Interactive Map Viewer.

##### **Indicator 2: Miles of impaired 303d streams; aquatic macroinvertebrate metrics (where sampled)**

Data source: Data source: Data were retrieved from spatial Integrated Water Quality Report data from the most recent 2020-2022 water quality reports for both California and Nevada.

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

### **Monitoring Result**

**Indicator 1:** Data show 22 subwatersheds are in a Functional condition, 442 subwatersheds are in a Functional-at-Risk condition, and 29 subwatersheds are in a Non-Functional condition. Therefore, little change in condition has occurred in these subwatersheds since the previous monitoring report. Most subwatersheds 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:** Similar to the 2020-2022 Monitoring Report, data show 266 miles of impaired streams and 60.01 acres of impaired lakes/reservoirs on USFS managed lands in Nevada. Data from the 2020-2022 California water quality report, which was not available for the USFS 2022 monitoring report; show 254 miles of impaired streams and 142 acres of impaired lakes/reservoirs on USFS managed lands in California.

### **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 2024 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 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 results do not indicate a need for changing the Forest Plan. However, several streams, lakes, and reservoirs are listed as not attaining water quality standards for identified beneficial uses. There has been no increase since last monitoring report on USFS managed lands in Nevada. In California there has been an increase of 88 impaired stream miles and 52 acres of impaired lakes/reservoirs on USFS managed lands in California since the previous monitoring report. 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.

## **MON-WTRSHD-02: How are physical terrestrial features affecting watershed conditions? (36 CFR 219.12(a)(5)(i))**

### **Indicator 1: Miles Roads & trails, open road density, road and trail maintenance.**

Data source:

T:\FS\Reference\GIS\r04\_hrf\edw\_sde\_default\_as\_myself.sde\S\_USA.Transportation, WIT, FACTS

### **Indicator 2: Proximity to water, mass wasting, soil productivity, erosion, contamination**

Data source: Travel Management Plan EIS', local knowledge

### **Monitoring Result**

**Indicator 1:** There are 5,303 miles of roads and 3,532 miles of trails within the Humboldt-Toiyabe national forest. Of the 5,303 miles of roads, 0.5 miles are unmaintained, 400 miles are maintenance level 1, 4,037 miles are maintenance level 2, 706 miles are maintenance level 3, 84 miles are maintenance level 4 and 49 miles are maintenance level 5. Information on miles of road maintenance is currently unavailable due to issues with the database where information is kept. Each ranger district completed an environmental impact statement in regards to the amount and density of roads/trails on the forest. These travel corridors contribute sediment to nearby streams, but this effect is mitigated through the use of Best Management Practices (BMPs) and regular maintenance. During 2022 and 2023, no specific monitoring was done on the impact of roads/trails to water bodies or BMP effectiveness.

**Indicator 2:** The proximity of routes to water bodies, erosion due to lack of maintenance of travel routes and mine-related contamination can all impact watershed conditions. The density and proximity to water bodies for all official roads and trails was analyzed in the districts' Travel Management Plans. These values remain unchanged and therefore no change in impact to watersheds is expected for the 2022 and 2023 time period. It is likely that a lack of maintenance of roads contributed excess sediment to watersheds, but this was not specifically monitored.

Similarly, abandoned mines on the forest may have contributed to minor contamination of watersheds, but limited monitoring was performed on these sites.

### Trail Annual Accomplishments FY 2022\*

District	Miles maintained	Miles improved or created	Miles Meeting Standard	% Miles Meeting Standard
Carson	218.75	0.80	339.50	74.66
Bridgeport	148.29	0.10		
Austin	3.50			
Tonopah	30.90			
Spring Mountains	16.58			
Mountain City				
Ruby Mountain	71.58	2.00	35.45	5.51
Jarbidge			0.55	0.18
Ely	27.03			
Santa Rosa				
<b>HTNF Total</b>	516.63	2.90	375.50	10.23

\*Shaded cells indicate no new information

### Trail Annual Accomplishments FY 2023\*

District	Miles maintained	Miles improved or created	Miles Meeting Standard	% Miles Meeting Standard
Carson	205.11	1.45	413.14	89.49
Bridgeport	125.60	0.45	525.84	95.60
Austin	4.90	0.10	65.13	36.34
Tonopah	27.80	2.50	68.36	22.95
Spring Mountains	44.03	0.15	111.47	60.30
Mountain City				
Ruby Mountains	23.31	0.00	49.94	7.84
Jarbidge	12.53	0.00	16.85	5.53
Ely				
Santa Rosa	10.33	0.00	19.22	26.02
<b>Forest-wide Total</b>	453.61	4.26	1,269.96	34.50

## Finding

**Indicators 1 & 2:** Available data indicates there is no need for a change to Forest Plans or monitoring sources or methodologies

### **MON-WTRSHD-03: What is the water permanence in different watersheds across the Forest and does this pose challenges for meeting desired conditions? (36 CFR 219.12(a)(5)(i, vi))**

**Indicator 1: Duration of water in channels of select streams.**

Data source: FLOWPER

#### **Monitoring Result**

**Indicator 1:** The United States Geological Survey has created a database for field observations of water permanence. This database is relatively new and over time as information is gathered the Forest Service can use this to understand water quantity and the permanence of waterbodies across the forest through time. Forest Service employees can record into the database as the product progresses and learn more by attending trainings.

#### **Finding:**

**Indicator 1:** Data was not available to the Humboldt-Toiyabe during the 2022-2023 monitoring period. This tool is expected to be better utilized in the 2024 & 2025 monitoring report.

### **MON-WTRSHD-04: How is watershed condition changing? (36 CFR 219.12(a)(5)(i))**

**Indicator 1: Watershed condition indicators (Class) from the Watershed Condition Framework. Essential projects completed.**

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

**Indicator 1 or 2: Projects effecting watershed conditions listed and how they have affected the conditions.**

Data source: WIT

#### **Monitoring Result**

##### **Indicator 1:**

Watershed condition indicators (Class) from the Watershed Condition Framework. Data show that no essential projects were completed in any of the Priority Watersheds currently identified in the planning area in the remainder of FY22 or FY23.

**Finding:**

**Indicator 1:** Monitoring does not indicate a need for change of the Forest Plan.

**MON-WTRSHD-05: What current forest management strategies are effective in meeting or moving riparian areas towards desired riparian conditions? (36 CFR 219.12(a)(5)(i))**

**Indicator 1: Multiple Indicator Monitoring (MIM), and/or the Lahontan Cutthroat Trout Habitat Assessment,**

Data source:

- MIM - Box\0417-2000NFResourceMgmt\Ecology Program Monitoring\Riparian Monitoring
- LCTHA - Glassic, H. C. , Al-Chokhachy, R., Macfarlane, W.W., Rasmussen, C., McGwire, K.C., Bouwes, N. 2023. Lahontan Cutthroat Trout Habitat Status Assessment Annual Report 2022.

**Indicator 2: Proper Functioning Condition (PFC)**

Data source: no data

**Monitoring Result**

**Indicator 1:**

- In FY2023, 24 MIM surveys were completed by ecology crew on Ruby Mountains, Jarbidge, and Austin-Tonopah ranger districts.
- *Lahontan cutthroat trout (LCT) habitat status assessment study*
- The overall goal for this assessment was to quantify riverscape health and habitat status in LCT occupied streams. The information from this report can provide a baseline for conditions for future monitoring reports, however it may not directly relate to specific Forest Service management actions because the focus is in a landscape context (gradient, valley bottom width, etc.). This study categorized valley bottom (maximum extent of river channel and riparian areas, including inactive and active areas) to classify areas both in the context of historical climatic or geologic events and anthropomorphic disturbances. The study also classified structural elements of streams (woody debris), channel units (riffle, run, pool), and substrates (sand, gravel, silt, etc.). For this monitoring question specifically, we will use information on floodplain connectivity (NDVI-define, and vertical disconnect values (incision), entrenchment values) to help determine the status of riparian areas in the study area.
- The LCT habitat status assessment (Galssic et al. 2023) was completed on the Upper Humboldt and Little Humboldt LCT management sub-units in 2022. Parts of these two management sub-units are on the Humboldt-Toiyabe national forests, but this effort was to classify habitat for the species across all land ownership types. The Forest Service land in these subunits is within the Santa Rosa Ranger District and Mountain City – Ruby Mountains – Jarbidge Ranger Districts. Streams included in this assessment within the HTNF are: Abel creek, Basin creek, Cottonwood creek, Chimney creek, Draw creek, East Fork Mary’s River, Fourth Boulder creek, Indian creek, Mary’s River, North Fork Cold

creek, Second Boulder creek, Short creek, South Fork Indian creek, T creek, West Mary's River, Wildcat creek, and William's creek.

- Many LCT streams (Lower & Upper Mary's River, North Fork Cold Creek, T Creek, and Wildcat Creek) in the study (Glassic et al. 2023) had NDVI values (a measure of greenness in satellite imagery) between 0.2 and 0.5 meaning the riparian vegetation is most likely limited to the active channel and has a mix of upland vegetation (sage-brush). This indicates low levels of floodplain connectivity. On the HTNF Draw Creek, Second Boulder Creek, and Fourth Boulder Creek had NDVI values greater than 0.5, this indicates higher levels of riparian vegetation and greater floodplain connection. In the Upper Humboldt Management Unit, this study found that the upper Mary's River, Wildcat Creek, T Creek, and Draw Creek had very low levels of vertical disconnect (<1 m) between bankfull and valley bottom indicating little incision. While in the Little Humboldt Management unit, Indian Creek also very little vertical disconnect (0.5 m) and less incision compared to Abel Creek with 1.3 m of vertical disconnect. Entrenchment ratios varied across and within management units, many streams surveys had around a 2:1 entrenchment ration which means they had moderate levels of entrenchment. Lower Mary's river had an entrenchment ratio at 3:1 which indicated the river was only slightly entrenched.

**Indicator 2:** No PFC data was collected in 2022 or 2023.

## Finding

### Indicator 1:

- MIM- Sites were established, so long term data showing change in conditions is unavailable until revisiting after 5 years. The average streambank stability of the 24 sites monitored was moderately high; 76%. This suggests that we are falling short of meeting the desired conditions of maintaining 90% streambank stability on LCT streams, and 80% stability on all other streams.
- *Lahontan cutthroat trout (LCT) habitat status assessment study* Results indicate a variety of conditions within streams on the HTNF in the LCT Humboldt Management Unit. It is unclear if these conditions can be directly related to management actions by the forest, but this data can be used as a reference to a change in condition over time. Information from this study does not warrant a change in the forest plan.

**Indicator 2:** No findings for this monitoring period

## **MON-TEC-1: What changes have occurred to landscape scale vegetative community types? 36 CFR 219.12(a)(5)(ii, vi))**

**Indicator 1: Climate Engine: Spatial extent (acres) and cover (%) of invasive annual grasses Forest-wide.**

Data source: MRLC (Multi-Resolution Land Characteristics Consortium), 2022 and 2023.

**Indicator 2: Extent of insect and disease mortality and damage across the Forest based on Aerial Detection Surveys.**

Data source: Forest Health and Prevention 2022 and 2023 Intermountain Region Aerial Detection Surveys.

**Indicator 3: Structure, composition, extent, and forest health of white bark pine populations, fire regime, wildfire impacts.**

Data source: 2024 Intermountain Region Aerial Detection Survey Data; R4 whitebark pine suitable habitat R-package modeling, 2020.

**Indicator 4: Changes in the occurrence and extent of invasive plants, acres treated.**

Data source: Forest Service Activity Tracking System (FACTS) Web Reports; Natural Resource Manager (NRM) Database.

**Indicator 5: Loss of forest cover and range vegetation condition.**

Data source: Forest Service Activity Tracking System (FACTS) Web Reports; Natural Resource Manager (NRM) Database; MRLC (Multi-Resolution Land Characteristics Consortium), 2022 and 2023.

**Monitoring Result**

**Indicator 1:** The 2022 and 2023 spatial extent of invasive annual grasses was mapped using 5% or greater cover as a threshold of density. 5% percent was used as the threshold because 5% percent is seen as a coverage value in which invasive annual grasses have become established on a landscape and have an increased likelihood of becoming problematic for the natural ecosystem dynamics.

In 2022, invasive annual grass cover ( $\geq 5\%$ ) extended approximately 2.4 million acres, 38% of the Forest. In 2023, invasive annual grass cover ( $\geq 5\%$ ) extended approximately 2.6 million acres, 41% of the Forest.

**Indicator 2:** In 2022 and 2023, Region 4 Forest Health Protection (FHP) staff conducted Aerial Detection Surveys (ADS) across the Humboldt-Toiyabe, to estimate acres of tree mortality due to forest disturbance agents. These agents include insects, disease, and abiotic conditions. The damaging agents captured in the ADS are: fir engraver, mountain pine beetle, subalpine fir decline, pinyon ips, unknown agent, Douglas-fir beetle, Jeffery pine beetle, unknown bark beetle, unknown defoliator, Marssonima blight, fire, and pinyon needle scale. Known damaging agents like mistletoe and white pine blister rust were not captured in the ADS.

In 2022, 5,307,963 acres was surveyed by the R4 FHP and 5,718,064 acres in 2023. There was a 75% overlap of surveyed area between 2022 and 2023. The total damaged acreage in 2022 was 39,481 acres. The top three agents were mountain pine beetle (11,090 ac), fir engraver (9,276 ac), and pinyon ips (8,092 ac). 2023 showed an overall decrease in the extent of tree mortality and defoliation with only 19,959 acres. The most prevalent damaging agents in 2023, were fir engravers (15,839 ac), mountain pine beetles (2,662 ac), and unknown (434 ac). Fir engravers and Jeffery pine beetles are the only agents that showed an increase from 2022 to 2023. Jeffery

pine beetle increased by 38% and fir engraver increased by 59%. Fir engravers and Jeffery pine beetles are mostly impacting the Sierra Zone (Carson and Bridgeport Ranger Districts). Mountain pine beetles were detected on every district of the Humboldt-Toiyabe. They are most pervasive in the Sierra Zone, the Ruby Mountains, and Jarbidge. The large extent of mountain pine beetle could be a result of its wide range of hosts, that include most native and introduced species of pine, except for Jeffery pine.

Pinyon ips dropped drastically from 8,092 ac in 2022 to only 154ac in 2023. However, Pinyon ips also extends to almost every district on the Humboldt-Toiyabe. Pinyon ips were extensive on the Carson City Ranger District, the Monitor Range in Austin-Tonopah Ranger District, and the White Pine Range in the Ely Ranger District.

**Indicator 3:** The Intermountain Region (R4) of the U.S. Forest Service, modeled recent and historical potential habitat for whitebark pine within national forest boundaries. The modeled acreage does not reflect known locations of whitebark pine, but instead reflects where whitebark pine is most likely occurs based on suitable habitat. The R4 model predicted that the Humboldt-Toiyabe has about 200,124 acres of whitebark pine habitat, which is approximately 3% of the Forest. Whitebark pine is most likely in the Sierra Nevada Mountain Range on the Carson and Bridgeport Ranger District (RD); Mountain City Jarbidge and the Ruby Mountains on the Elko RD, and Schell Creek Range on the Ely RD.

Mountain Pine Beetle is one of the known damaging agents to whitebark pine communities. In 2022 and 2023, Region 4 Forest Health Protection (FHP) staff conducted Aerial Detection Surveys (ADS) across the HT National Forest to estimate the acres of insects and disease related tree mortality. Mountain pine beetles were one of the top damaging agents in 2022 and 2023 across multiple pine communities. In 2022, mountain pine beetle covered 11,090 ac of the HT and 2,662 ac in 2023. The ADS surveys are not specific to whitebark pine communities or specify the acres of damage to whitebark pine communities.

White pine blister rust is also a known damaging agent to whitebark pine. The acreage of white pine blister rust is currently unknown on the forest, along with the number of whitebark pine populations that have been genetically tested to be rust resistant.

Wildfires have historically been capable of extending into whitebark pine sub-alpine ecosystems. The fires that occurred on the Humboldt-Toiyabe in 2022 and 2023, did not occur nor impact whitebark pine habitat.

**Indicator 4:**

The Humboldt-Toiyabe Weeds Management Program treated 2,305 acres in 2022 and 707 acres in 2023. The main annual grasses treated in 2022 and 2023, were cheatgrass (*Bromus tectorum*) and medusahead (*Taeniatherum caput-medusae*). Other invasive annuals treated were yellow star thistle (*Centaurea solstitialis*), various knapweeds, scotch thistle (*Onopordum acanthium*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), and bull thistle (*Cirsium vulgare*).

**Indicator 5:** There were several factors that attributed to loss of forest cover and range vegetation conditions in 2022 and 2023. The Forest thinned about 1,945 ac of hazardous fuel in 2022 and 4,954 ac in 2023. Damaging agents like insects and diseases, led to a combined total of 59,440 acres of tree mortality in 2022 and 2023 on the forest.

Rangeland vegetation communities were impacted by a combination of wildfire activity, invasive annual grass encroachment, and range activity. The two fires in 2022 and 2023, were the Wildcat Fire, which burnt approximately 3,068 acres in the Jarbidge Ranger District and the Ellsworth Fire that burnt approximately 702 acres in the Austin Tonopah Ranger District. These fires impacted

big sagebrush shrubland and introduced annual grassland vegetation communities. One of the largest disturbances on the Forest is expansion of invasive annual grasses. In 2022, 38% of the Forest had greater than 5% cover of invasive annual grasses. In 2023, the expansion grew to 41% of the Forest. Grazing has potential to impact rangeland vegetation communities. The total allotment pasture acres administered in 2022 were 4,107,602 ac and 2,535,778 ac in 2023.

## **Finding**

**Indicator 1:** Based on the findings and spatial extent of invasive annual grasses, the Forest needs to continue monitoring and treating invasive annual grasses.

**Indicator 2:** The Aerial Distribution Surveys (ADS) showed some increase and decrease in the number of acres damaged by agents across the forest from 2022 to 2023. The ADS can inform where treatment and restoration efforts are needed across the forest. The ADS can also be used to inform forest management about damaging agent diversity and if new agents are being introduced on the Forest. Continuing to collect data on the extent of damaging agents, tree mortality, and tree defoliation could be helpful for understanding forest health and assist in targeted treatment and restoration efforts.

**Indicator 3:** The Humboldt-Toiyabe and the Intermountain Region of the National Forest have an understanding of the extent and status of whitebark pine populations and known threats to whitebark pine populations. Continued monitoring and research can help identify vulnerable populations, monitor stand mortality, and possible introduction or increase of damaging agents.

**Indicator 4:** Currently the ground-based treatment options are limited by access, topography, cost, and equipment capabilities and reach (hose length). There is an effort to expand the weeds management program through aerial herbicide and other land management strategies to limit the expansion of annual grasses. At this point, there is no need to change monitoring questions, data source(s), or HTNF LRMPs.

**Indicator 5:** There was not a significant loss of forested land in 2022 and 2023. There were some thinning efforts, but no significant wildfires in forested areas. Treatment and continued monitoring of forest mortality from insects and diseases is recommended. Especially for vulnerable populations such as whitebark pine. Rangeland vegetation communities were impacted mostly by the Wildcat Fire and the spread of invasive annual grasses. Continued monitoring of rangeland vegetation communities post-fire is recommended to ensure invasive annual grasses are not establishing in the burn scar. Also, continuing to treat invasive annual grasses to reduce further spread and impact.

## **MON-TEC-02: How are current allotment and territory management strategies effective in meeting or moving toward desired rangeland conditions? (36 CFR 219.12(a)(5)(ii))**

**Indicator 1: Short-term and long-term monitoring (qualitative and quantitative).**

Data source: NRM Range Application/RIMS and Forest Range Program 2210-Allotment Management and Planning Pinyon folders

**Indicator 2: Grazing Allotment Acres Administered to Standard-Implement direction found in the Forest Plan, project level NEPA decisions, Allotment Management Plans (AMP), Annual Operating Instructions (AOI), grazing permits or agreements, and other relevant documents including Biological Opinions (BO).**

Data source: NRM Range Application/RIMS-Allotment Acres Administered to Standard

**Indicator 3: Population of wild horses and burros**

Data source: Wild Horse Census Analysis USGS; data entered into NRM

**Monitoring Result**

**Indicator 1:** Data indicates no departure from the norm.

**Indicator 2:** Reported total allotment pasture acres administered to standard in 2022 were 4,107,602 and 2,535,778 in 2023.

**Indicator 3:** Census flights were flown for 5 WHBT in FY23 and 1 WHT in 2022 in partnership with the BLM. Surveys were taken using the Simultaneous Double-Observer Aerial Survey Method standardized by USGS. Four of the six wild horse and burro territories were significantly over maximum appropriate management level.

Year	Territory Name	District	Horse/Burro	Minimum AML	Maximum AML	Census Results
2023	Cherry Springs	Mountain City, Ruby Mountains, Jarbidge	Horse	42	68	11
2023	Monitor	Austin-Tonopah Ranger District	Horse	51	90	124
2023	Little Fish Lake	Austin-Tonopah Ranger District	Horse	80	93	139
2023	Spring Mountains	SMNRA	Burro	20	35	0
2023	Johnnie	SMNRA	Burro	0	3	45
2023	Red Rock	SMNRA	Burro	0	3	67

**Finding**

**Indicator 1:**

Conditions appear to be static, neither trending toward or away from desired conditions.

**Indicator 2:** Overall, the Forest range program manages approximately 4,617,117 acres which includes 257 active allotments, 149 grazing permits, and 236,425 Animal Unit Months (AUM).

District Name	Permits*	Active Allotments	Authorized Livestock Use**	Acreage
Austin-Tonopah	18	32	24,929 AUM	1,433,971
Bridgeport	12	47	12,975 AUM	830,285
Carson	7	14	3,021 AUM	185,365
Ely	18	30	23,693 AUM	907,346
Mountain City-Ruby Mountains-Jarbidge	77	122	126,961 AUM	988,545
Santa Rosa	16	12	44,846 AUM	271,605
<b>Total</b>	<b>149</b>	<b>257</b>	<b>236,425 AUM</b>	<b>4,617,117</b>

\*Number of permits varies year to year due to permit waivers. Authorized livestock use may also vary each year due to full or partial permittee convenience nonuse or resource protection response due to wildfire, drought or excessive wild horse and burro use.

Acres administered to standard is entered into NRM/RIMS at the pasture level. In 2022, approximately 89% of allotment pasture acres across the forest were reported as administered to standard, and 55% in 2023.

Although acres administered to standard is reported as an accomplishment, there is no assigned annual target. Typically, budget and personnel vacancies are constraints as to how many pasture acres are administered to standard each year. Authorized officers must prioritize and schedule monitoring activities on a year-to-year basis consistent with available resources and priorities. Allotments selected to be administered to standard may be prioritized based on legal obligations (ESA/BO monitoring requirements), permittee's history of compliance, allotments with new permittees, any unresolved resource or administrative problems, new or emerging resource issues, schedules for project-level analysis, implementation of recent decisions and time since allotment was last inspected. Some allotments may be inspected several times a year depending on the issues and/or management complexity.

**Indicator 3:** Monitoring results do not indicate a need for changing the Forest Plan. Lack of consistent funding and staff needed to update Territory Management Plans impair our ability to manage our Wild Horse and Burro Territories to Forest Plan Standard at this time.

### **MON-TEC-03: What management actions are contributing to the achievement of desired conditions related to fire regimes? (36 CFR 219.12(a)(5)(ii))**

#### **Indicator 1: Acres of prescribed fire, including pile burning, in WUI and non-WUI**

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

#### **Indicator 2: Acres of mechanical and hand-thinning treatment, in WUI and non-WUI**

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

#### **Indicator 3: Acres of fires managed for resource objectives by ecosystem type.**

Data source: T drive and Pinyon regional BAER folders

## Monitoring Result

**Indicator 1:** There was a combined 1,732 acres of HTNF land treated by prescribed fire, including pile and broadcast burning, across the forest in 2022 and 2023. In 2022, a total of 907 acres were treated by prescribed fire with 95% of the treatments occurring in the WUI and 5% occurring outside of the WUI. In 2023, a total of 825 acres were treated by prescribed fire with 91% occurring in the WUI and 9% occurring outside the WUI.

**Indicator 2:** In 2022 and 2023, there was a combined total of 29,803 acres treated by mechanical and hand-thinning, including thinning of hazardous fuels and piling of fuels by hand or machine, across the forest. A total of 14,997 acres were treated in 2022, with 42% of the treatments occurring in the WUI and 58% occurring outside of the WUI. In 2023, a total of 14,806 acres were treated, with 35% occurring in the WUI and 65% occurring outside the WUI.

**Indicator 3:** In 2022 and 2023 wildfires occurred on the HTNF, all of which were full suppression strategies. These wildfire occurrences had the potential to shift vegetation communities into annual grassland vegetation communities. The acres of wildfire that supported resource objectives and met the desired conditions of the forest plan were not recorded as accomplished in the FACTS database.

## Finding

**Indicator 1:** Prescribed fire treatments occurred within the WUI and outside of the WUI, with majority of prescribed fire treatment occurring in the WUI. Prescribed fires have been a useful management strategy in lowering fuel loads, stimulating regeneration, and enhancing variation in vegetation structure and composition. Although dependent on ecosystem type, these management treatments are contributing to the achievement of desired conditions related to fire regimes. While the forest has been able to burn 1,732 acres in 2022 and 2023, the goal moving forward would be to utilize this tool to treat more acres of forest land, especially in those locations that have not had implementation.

**Indicator 2:** Mechanical and hand-thinning treatments occurred within the WUI and outside of the WUI, with a total of 29,803 acres being treated across the forest in 2022 and 2023. These treatments have been an effective tool for reducing stand density, reducing fuel loads, and protecting and conserving both WUI and non-WUI areas. Increasing utilization of this fuel treatment across more acres of forest land would enhance ecosystem resiliency to wildfires and further contribute to the achievement of desired conditions.

**Indicator 3:** Wildland fires occurred on HTNF land, however, acres of fires managed for accomplishing resource objectives and meeting the desired conditions of the forest plan have not been well documented. The Forest Service should continue following policies outlined in the forest plan, WFDSS, and Forest Service Handbook for wildfire management aimed at resource objectives, while also considering fire activity variability. It is recommended that acres of wildland fires managed for resource objectives and their impacts on different ecosystem types be more effectively recorded and monitored.

**MON-TEC-04: How are fire regimes changing relative to desired conditions and the historic range of variation? (36 CFR 219.12(a)(5)(ii))**

**Indicator 1: Number and acres of fire by ecosystem type**

Data source: T drive and Pinyon regional BAER folders

**Indicator 2: Fire severity by ecosystem type**

Data source: T drive and Pinyon regional BAER folders

**Indicator 3: Change in LANDFIRE Vegetation Condition Class (VCC)**

Data source: LANDFIRE spatial dataset and the Vegetation Condition Class (VCC) dataset

**Monitoring Result**

**Indicator 1:** There were two wildland fires on the Humboldt-Toiyabe National Forest in 2022 and none in 2023. These two fires were the Wildcat fire, which burnt approximately 3,068 acres in the Jarbidge Ranger District and the Ellsworth fire that burnt approximately 702 acres in the Austin Tonopah Ranger District. These fires burnt predominantly in big sagebrush shrubland and introduced annual grassland vegetation communities. The table in indicator 2 below gives a more detailed breakdown on the fire within each ecosystem type.

**Indicator 2:** Soil burn severity (SBS) is the metric used to measure the fires effects on the ground surface. Soil burn severity is split up into four categories: unburned/very low, low, moderate, and high. The wildcat fire was 14% very low/unburnt, 28% low, 55% moderate and 3% high SBS. The Ellsworth fire was 8% very low/unburnt, 77% low and 15% moderate SBS. The SBS for each ecosystem type is summarized in the two tables below.

Wildcat Fire						
Vegetation Type	Acres Burnt	Percent of Total Fire Area	Acres Burnt at Very Low SBS	Acres Burnt at Low SBS	Acres Burnt at Moderate SBS	Acres Burnt at High SBS
Alpine Dwarf-Shrubland, Fell-field and Meadow	5.98	0.19	0.35	2.36	3.00	0.26
Aspen-Mixed Conifer Forest and Woodland	10.41	0.34	2.44	0.88	2.13	4.96

Aspen Forest, Woodland, and Parkland	24.37	0.79	1.32	0.86	16.12	6.08
Big Sagebrush Shrubland and Steppe	2669.88	87.03	333.91	755.33	1515.7 5	64.89
Deciduous Shrubland	67.14	2.19	6.44	9.45	41.59	9.65
Desert Scrub	0.61	0.02	0.00	0.61	0.00	0.00
Grassland	36.70	1.20	8.20	15.18	10.12	3.19
Grassland and Steppe	14.48	0.47	5.01	3.09	4.84	1.54
Introduced Annual and Biennial Forbland	0.46	0.02	0.00	0.00	0.46	0.00
Introduced Annual Grassland	8.13	0.27	1.72	5.88	0.54	0.00
Introduced Perennial Grassland and Forbland	10.09	0.33	2.11	2.57	3.97	1.44
Introduced Upland Vegetation- Shrub	0.44	0.01	0.05	0.39	0.00	0.00
Introduced Woody Wetland Vegetation	3.28	0.11	0.00	1.04	2.24	0.00
Low Sagebrush Shrubland and Steppe	95.04	3.10	44.86	45.23	4.95	0.00
Mountain Mahogany Woodland and Shrubland	28.52	0.93	5.95	11.10	8.40	3.07
Pinyon- Juniper Woodland	8.66	0.28	0.00	1.32	6.04	1.29
Sparse Vegetation	0.68	0.02	0.16	0.22	0.30	0.00

Spruce-Fir Forest and Woodland	4.33	0.14	3.04	1.29	0.00	0.00
Western Herbaceous Wetland	6.26	0.20	0.00	1.89	3.97	0.39
Western Riparian Woodland and Shrubland	72.34	2.36	2.19	9.63	57.62	2.90
<b>Total</b>	<b>3067.79</b>					

<b>Ellsworth Fire</b>					
Vegetation Type	Acres Burnt	Percent of Total Fire Area	Acres Burnt at Very Low SBS	Acres Burnt at Low SBS	Acres Burnt at Moderate SBS
Alpine Dwarf-Shrubland, Fell-field and Meadow	1.69	0.24	0.00	0.93	0.76
Big Sagebrush Shrubland and Steppe	394.14	56.12	46.06	302.32	45.76
Deciduous Shrubland	11.77	1.68	0.54	8.18	3.04
Grassland	10.06	1.43	0.36	7.62	2.08
Introduced Annual and Biennial Forbland	11.24	1.60	1.00	9.14	1.10
Introduced Annual Grassland	268.56	38.24	5.29	209.89	53.37
Introduced Perennial Grassland and Forbland	0.22	0.03	0.00	0.00	0.22
Introduced Upland Vegetation-Shrub	0.45	0.06	0.00	0.45	0.00
Low Sagebrush	1.69	0.24	0.21	1.47	0.00

Shrubland and Steppe					
Mountain Mahogany Woodland and Shrubland	0.14	0.02	0.08	0.06	0.00
Pinyon-Juniper Woodland	2.32	0.33	0.75	1.56	0.00
Total	702.26				

**Indicator 3:** The Vegetation Condition Class (VCC) provides insight into how much current vegetation has departed from historical conditions and is quantified based on the degree of departure from historical fire regime and the associated vegetation. Since fire regimes are dependent on vegetation types, any changes in fire regimes, such as shifts in frequency, severity, and duration can significantly impact VCC by altering vegetation structure, composition, and fuel loads.

The big sagebrush shrubland and steppe vegetation type experienced the highest number of acres burned during both the Wildcat Fire and the Ellsworth Fire, burning through 2,669.8 acres and 394.14 acres respectively. As of 2022, the big sagebrush ecosystem is classified as having a moderate to high VCC due to the low fire resiliency of sagebrush and displacement from non-native annual grasses resulting in a moderate to significant departure from historical vegetation reference conditions.

**Finding**

**Indicators 1 and 2:** Fire is an essential part of a healthy landscape but needs to be managed carefully, especially in regard to WUI. There is an increasing trend in large wildfires and it is the responsibility of the USFS to understand how and why these fires are happening so they may be able to respond and manage them with as little negative impact as possible. In 2022-2023 the HTNF was fortunate to only have two main wildfires, neither of which were in WUI. Fire severity was primarily low and moderate severity. This is likely due to the shrub and grass fuel types in the area.

The fire regime change has treated ecosystems differently. Aspen dominated ecosystems have been relatively unaffected by fire and continue to stay fairly healthy. Pinyon-Juniper (PJ) have seen extensive expansion and increased density over the years. The desired condition for PJ is a mosaic of trees and open areas that promote diversity of understory plant communities. The current trend has opposed this, though drought periods have led to widespread mortality of PJ.

Sub-alpine forests have seen an increase in density of smaller diameter trees due to fire suppression and missing 1-3 fire cycles. This has led to an increase in large wildfires and diseases such as white-pine blister rust, both of which go against desired conditions.

Yellow pine/ mixed conifer forests have had an increase of fuel loads due to drought conditions and fire suppression. This in turn has allowed an increase in high severity fire which is antithetical to the desired condition of frequent, low severity fires.

In some lower areas across the forest, shrubland communities have been replaced by invasive annual grasses following disturbance. This new ecosystem type encourages frequent fires and rapid fire spread which prevent reestablishment of native shrubland communities. This is seen in the Ellsworth fire where nearly 40% of the burn occurred in these non-native grasslands.

The data from 2022 and 2023 does not indicate a large departure from the historic fire regimes on the forest, but it is only a small time frame. Since fire activity varies significantly year to year based on climatic factors, a larger time frame needs to be evaluated to assess departures from historic regimes.

**Indicator 3:** The increasing frequency of large wildfires, combined with higher fuel loads that contribute to an increase in fire severity, has affected different vegetation types in varying ways. This changing fire regime has impacted vegetation structure and composition, causing ecosystems to depart from their historic conditions. Given that different ecosystem types vary significantly in their historical resilience and response to fire and disturbance, it's crucial to first understand how the changing fire regime interacts with these vegetation types and their desired conditions. Those interactions have a direct impact on the VCC and help further clarify why current vegetation shows high or low departure from historical conditions.

Vegetation departure from historical vegetation conditions is quantified into three condition classes: low, moderate, and high. Low vegetation condition class indicates a "very low" or "low" vegetation departure less than 33%, moderate indicates a "moderate to low" or "moderate to high" departure of 33-66%, and high indicates a "high" or "very high" departure greater than 66%.

In both the Wildcat and Ellsworth fire, big sagebrush ecosystems experienced the most fire activity. Mountain big sagebrush ecosystems show 90.7% high departure from historical conditions, 8.3% moderate departure, and 0.4% low departure while Wyoming and basin big sagebrush ecosystems show 76.1% moderate departure from historical conditions, 22% low departure, and 1.4% high departure. Stand recovery is slow following fire, and fire can provide suitable conditions for non-native annual grasses, such as cheatgrass to dominate sagebrush ecosystems.

Aspen forests and woodlands show 66.5% high departure from historical conditions, 22.4% moderate departure, and 10.6% low departure. The VCC reflects not only the changing fire regime but also the impact of historical management practices such as unregulated grazing and fire suppression.

Pinyon juniper woodlands experienced 98.4% low departure from historical conditions, 0.8% high departure, and 0.6% moderate departure. Variation in fire, drought events, and insect and disease infestations across the range of pinyon-juniper are important factors influencing the VCC.

Subalpine forests and woodlands show 48.6% low departure from historical conditions, 41.2% moderate departure, and 4% high departure. Interactions between historical fire suppression practices, mountain pine beetle activities, and white pine blister rust contribute to the VCC.

Yellow pine mixed conifer forests and woodlands are 77% highly departed from historical conditions, 21.3% moderately departed, and 0.5% with low departure. The change in forest structure has resulted in these ecosystem's being more susceptibility to droughts and bark beetles. This has led to extensive mortality and increased fuel loads contributing to higher severity wildfires.

## Soil

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

#### **Indicator 1: Soil temperature and moisture data (SCAN/SNOTEL)**

Data Source: NRCS National Water and Climate Center

#### **Indicator 2: Soil stability: Erosion and sedimentation. (Landslides, flooding)**

Data Source: Weather station data; local knowledge

#### **Indicator 3: Burn severity, (Wildland fires - BAER)**

Data Source: T drive and Pinyon regional BAER folders

### **Monitoring Results**

**Indicator 1:** There are 60 SNOTEL and SCAN sites installed in the Humboldt-Toiyabe national forest that record soil moisture data. This includes 3 in the Santa Rosa district, 7 in the SMNRA, 12 in the Jarbidge district, 10 in the Ruby mountains, 8 in the Ely ranger district, 1 in the Austin-Tonopah district, 10 in the Carson ranger district and 9 in the Bridgeport ranger district.

The soil moisture levels across the forest are highly dependent on snowmelt from the winter season. This means that the highest soil moisture levels are found during late spring and early summer and the lowest levels occur during late summer and early fall. 2022 was a low snow year with April 1st snowpack readings varying from 51% of normal to 64% across the forest. This led to low soil moisture levels across the forest with most areas falling in the 20th-30th percentile and central Nevada ranges in the 2nd-20th percentiles. After a

strong monsoon rain season, most of the forest's soil moisture readings had rebounded close to average and the SMNRA was in the 90-95th percentile.

The following winter saw near record snowfall for much of the forest. On April 1st, 2023, the snowpack percent of normal across the forest ranged from 209% to 327%.

Unsurprisingly, the soil moisture level remained above average for the extent of the summer.

This past winter had slightly above average snowfall and basins on April 1st were between 110% and 166% of normal. Currently, soil moisture levels are hovering near average.

**Indicator 2:** Major weather events have the potential to generate localized flooding and mass wasting events that temporarily impact soil productivity. In 2023, hurricane Hilary generated over 10 inches of rain across the Spring Mountains causing widespread flooding and mass wasting. This same storm also resulted in heavy precipitation in portions of the forest further north causing some smaller, localized impacts.

**Indicator 3:** Two fires in 2022 had BAER analysis done on them. These two were the Wildcat fire located 40 miles northwest of Wells, NV and the Ellsworth fire near Gabbs, NV. The Wildcat fire burned just over 3,000 acres of Forest Service land with a majority moderate soil burn severity (SBS), some low SBS and a small amount of high SBS. The Ellsworth fire burned 702 acres of Forest Service land with 54 acres of unburned/low SBS, 542 acres of low SBS and 106 acres of moderate SBS. There were very few fires in 2023 and no BAER assessments were completed.

### **Finding**

**Indicators 1:** In 2022, low soil moisture persisted for most of the growing season. In 2023, soil moisture levels were far above average throughout the summer growing season. Inter-year fluctuations like this are expected due to large climatic differences year to year. If a trend of abnormal soil moisture conditions exists in the future it may indicate that altered precipitation due to climatic variations is affecting the productivity of the soil across the forest. The previous two years, however, do not indicate any change in soil productivity due to soil moisture changes.

**Indicator 2:** Some adverse soil impacts were caused due to the unusually intense precipitation caused by hurricane Hilary. Flooding and mass wasting events temporarily reduced soil productivity locally, but these adverse effects are expected to abate in the short term.

**Indicator 3:** Overall, fire activity was minimal in 2022 and 2023 on the Humboldt-Toiyabe national forest. Of the two fires with BAER data from this time period, minimal areas of high SBS were noted. The low and moderate SBS areas saw some temporary losses to soil productivity post fire due to erosion, loss of litter/organic matter and loss of canopy cover. These impacts are generally short-term in low to moderate SBS.

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

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

Data Source: Range program long term plot monitoring data

### **Indicator 2: Soil stability: Erosion and sedimentation.**

Data Source: Range program long term plot monitoring data

### **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: USFS R04 BMP Monitoring database.

### **Indicator 5: Soil Biological Crust**

Data source: None currently.

## **Monitoring Results**

**Indicator 1:** Minimal data for soil litter cover and bare ground areas was collected in the past two years. The available data is mostly from Sierra Zone range allotments where ESA species are present. In these areas, bare ground coverage is recorded on an annual basis. In 2022 there were 14 bare ground coverage data points; 6 were 2% or less, 13 were less than 10% and one was 12%. In 2023 only 3 bare ground assessments were done due to the high snow year. These 3 recordings were 10%, 7.9% and 1.3%.

**Indicator 2:** Range long-term monitoring data includes measurements of streambank stability and alteration. This is mostly limited to allotments where ESA species are present in the Sierra zone and the Mountain City, Ruby Mountains, Jarbidge ranger district (MCRMJRD). Limits for bank alteration are set at 10% for the Sierra zone areas with ESA species present. In 2022 and 2023, 17 out of 18 surveyed allotments were under the streambank alteration limit.

In the MCRMJRD, limits are not set for streambank alteration. In 2022, 8 of 17 allotments surveyed had alteration measurements greater than 10%, and in 2023 7 of the 17 did.

**Indicator 3:** In 2022, zero BMPs evaluations were completed. In 2023, four evaluations were completed. Two of these were for prescribed fires and will be discussed under indicator 4. The other two were related to stream restoration activities. Both evaluations indicated marginally effective BMPs with a need for continued maintenance and evaluations in subsequent years.

**Indicator 4:** In 2022, no prescribed fire BMP assessments were conducted. In 2023, two prescribed fires had a BMP assessment performed. The BMPs were listed as effective for these two burns. No signs of erosion were noted from the burned area itself, and minor erosion was noted from the fireline.

**Indicator 5:** No monitoring has been done on soil biological crust coverage and development across the forest. Efforts are underway to initiate this data collection.

### **Finding**

**Indicator 1:** There is a very limited dataset related to bare ground/litter coverage. The data we have is on range allotments in the Sierra zone where ESA species are present. What is available shows relatively low bare ground patches and is mostly in line with historical data (which is also a very limited dataset). More monitoring is needed to assess soil cover across the forest on different projects. More focus on upland areas would help give a better assessment or soil condition in varying ecological areas.

**Indicator 2:** There is a very limited dataset relating to sign of soil erosion across the forest. What is available is related to streambank stability on rangeland allotments in the Sierra zone and the RMMCJRD. These assessments show the amount of animal usage along streambanks which could destabilize the soil in these areas resulting in increased soil erosion. The data show that the alteration along streams in the Sierra zone is low, but in the RMMCJRD there are some areas of higher streambank alteration. With the small dataset it is difficult to draw many conclusions, but the data do show that more monitoring is needed along waterbodies to assess whether our actions are generating higher erosion susceptibility.

More monitoring is also needed in the upland areas of the forest to assess the soil stability and levels of erosion in those areas from our actions.

**Indicator 3:** Minimal BMP evaluations were performed during the two years this report covers. Of these four, half demonstrated effective BMPs and the other half demonstrated marginally effective BMPs. There is a need to perform more BMP evaluations on a more diverse range of management activities to assess how effective our implemented BMPs limit soil erosion and maintain soil productivity.

**Indicator 4:** The prescribed fire BMPs implemented were effective at limiting erosion resulting from the activities performed. As the forest increases size and scale of prescribed fire, it will be important to scale monitoring efforts to ensure BMPs are effective at limiting erosion and maintaining soil productivity.

**Indicator 5:** There is a need to initiate a biological soil crust monitoring plan for the forest. Biological soil crust plays very important ecological and hydrologic functions in arid to semi-arid regions such as many parts of the Humboldt-Toiyabe National Forest. Biological soil crusts are easily destroyed from soil disturbance.

## **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 .**

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 stand in the Ruby Mountain Wilderness (McCutcheon Creek) appears to have been grazed heavily for some time and remains in low ecological condition. Bare soil on this willow/mesic graminoid site was 66%. Eighteen plots were monitored on the Ely Ranger District in 2018 & 2019. The purpose of monitoring 12 of these sites was to form a baseline for planning projects to improve ecological condition in an area prone to livestock congregation. Current condition on these sites ranged from poor to good. Eleven plots in spring habitats were monitored in a wild horse territory on the Ely Ranger District. Four of the plot locations could not be monitored in detail, because the water was piped away, the spring was in a narrow, slot canyon, or the remnant vegetation was limited to a tall, wild rose thicket. All the monitored sites, except for two in slot canyons, had heavy trampling, low amounts of desirable vegetation and high amounts of bare soil. None were in functioning condition. The data indicated the wild horse population was beyond the capacity of the Forest to support.

**Finding**

**Indicator 1:** Based on the 2020 Monitoring Report, general aspen decline is occurring, but data is too outdated to confidently report on current conditions. There is a need to recollect stand data to compare to previously collected data and observe any changes and management needs.

**MON-FOCAL-SPECIES-02: What is the status of white bark pine populations on the Forest? (36 CFR 219.12(a)(5)(ii, iii, iv, vi))**

**Indicator 1: Forest structure and composition**

Data source: Ecological Condition Monitoring Plots, 2024 Intermountain Region Aerial Detection Survey Data; R4 whitebark pine suitable habitat R-package modeling, 2020. Forest Service Activity Tracking System (FACTS) Web Reports; Natural Resource Manager (NRM) Database; MRLC (Multi-Resolution Land Characteristics Consortium) 2022 and 2023.

**Indicator 2: Prevalence of insect and disease damage and mortality agents**

Data source: Intermountain Region of Aerial Detection Surveys, 2022 and 2023.

**Indicator 3: Spatial extent (acres)**

Data source: Intermountain Region whitebark pine species distribution model, 2024.

**Indicator 4: Evidence of other stressors affecting white bark pine populations**

Data source: N/A

**Monitoring Results**

**Indicators 1 and 2:** Mountain pine beetles are one of the top agents damaging whitebark pine communities. In 2022 and 2023, Region 4 Forest Health Protection staff conducted Aerial Detection Surveys (ADS) across the Humboldt-Toiyabe National Forest to estimate the acres of insect and disease related tree mortality. Mountain pine beetles were one of the top damaging agents in 2022 and 2023 across multiple pine communities. In 2022, mountain pine beetle covered 11,090 ac of the Forest and 2,662 ac in 2023. ADS are not specific to whitebark pine communities or specify the acres of damage to whitebark pine communities. ADS do not capture white pine blister rust and mistletoe, which are known damaging agents to whitebark pine communities. In person monitoring is needed to detect the extent of white pine blister rust and mistletoe on the Forest.

Drought and warming temperatures can be damaging to whitebark pine communities by creating stress for the trees. Stress can weaken their defense systems and make stands vulnerable to mountain pine beetles or other damaging agents. In NOAA's 2022 National Climate Annual Report Nevada's average temperature was above average at 117°F and the statewide precipitation average was 24%, which is below average. The 2023 National Climate Annual Report noted that Nevada's statewide average temperature was near average at 78°F, and the statewide precipitation average was above average at 114%. NOAA's National Climate Annual Report for 2023 noted that there were several atmospheric river events on the west coast. Drought and dry conditions can also increase the likelihood and extent of wildfires in whitebark pine habitat. However, there was no documentation of fire impacting whitebark pine in 2022 and 2023.

**Indicator 3:** The Intermountain Region (R4) created an R-package that can be used to model whitebark pine occurrence and potential habitat on Forest Service land. The R4 model predicted that the Humboldt-Toiyabe has about 200,124 acres of potential whitebark pine habitat, which is approximately 3% of the total forest area. The modeled acreage does not reflect known locations of whitebark pine, but instead reflects where whitebark pine most likely occurs based on suitable habitat and past Forest Inventory and Analysis records.

**Indicator 4:** Monitoring results for this indicator have been covered in previous sections. It is suggested that this indicator is removed from future monitoring reports.

**Finding**

**Indicators 1 and 2:** The ADS reports are a good start to understand the extent of damaging agents on the Forest. In person monitoring can also provide further understanding of the status of whitebark pine and monitor white pine blister rust, something that is missing from the ADS report and is hard to observe through Aerial Detection Surveys.

**Indicator 3:** The Intermountain Region model is a good start to understand the spatial extent of whitebark pine on the Forest. On the ground monitoring and research can also help identify

vulnerable populations, stand mortality, and possible introduction or increase of damaging agents.

**Indicator 4:** This indicator is covered in other sections and should be removed from future

### **MON-FOCAL-SPECIES-03: How do aquatic communities indicate stream ecosystem integrity is being maintained? (36 CFR 219.12(a)(5) (i, iii, vi))**

**Indicator 1: Diversity; species composition; and other indices of aquatic vertebrates response to current conditions.**

Data source: Field Sampling Reports

**Indicator 2: 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: Macroinvertebrate surveys

### **Monitoring Results**

**Indicator 1:** Electrofishing sampling in Silver King Creek provided estimates of abundance of Paiute cutthroat trout and Rainbow trout within the creek. In 2022 sampling occurred across 5 stream reaches with an effort of 90+ hours. During sampling 923 Paiute cutthroat trout, 649 Rainbow trout, and 436 hybrids (Paiute x Rainbow trout) were captured.

In 2022 and 2023 fisheries biologists on the forest sampled 62 sites on the Carson and Bridgeport Ranger Districts for aquatic species. At seven sites, 15 individual Sierra Nevada yellow-legged frogs (SNYLF) were detected. At ten sites, 43 Yosemite toad (YT) were detected. Egg mass and tadpole surveys were conducted at these sites and 17 SNYLF tadpoles, 12 YT tadpoles, and 19 YT egg masses were detected.

**Indicator 2:** Aquatic macroinvertebrates are monitored in creeks within the vicinity of the Jerritt Canyon Mine on the Mountain City-Ruby Mountain-Jarbridge Ranger District. Thirty sites within the vicinity of the project area were sampled for benthic macroinvertebrates like Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies), which make up EPT taxa. The EPT taxa is then compared to the total number of species present for the EPT index percentage.

In 2023 three sites were surveyed on Jerritt Creek (JC01, 02, and 03) for the EPT Index. JC03 contain a lower EPT index value (10%) in 2023 compared to previous years but did contain three stonefly taxa that are intolerant to poor water quality. JC02 had an EPT index value of 22%, and JC01 had an EPT index value of 21%. These values suggest that water quality is not inhibiting sensitive taxa.

Two sites, GD-10 and GD-1, at Gracie Dump were sampled and had EPT values of 5% and 16%, respectively. GD-10 is not suitable for sensitive macroinvertebrate taxa due to the lack of fast-moving water, the primary species found at this site were true flies. GD-1 did have mayfly and stonefly present but not caddisfly and most macroinvertebrates collected were true fly species.

Two sites, SC-100 and SC, were sampled in Snow Canyon Creek and had EPT values of 23% and 34% respectively. SC-100 contained many macroinvertebrate species that are classified as highly

intolerant to poor water quality. The total EPT taxa found at site SC was above the long-term mean values for this site, and its EPT index suggests good water quality is present.

Sites B-03, B-02, and B(W) were sampled on Burns Creek and had EPT index values of 25%, 19%, and 28%. Lack of water was likely the primary influence on the lack of total taxa at B-03 and the primary taxa observed were true fly species. B-02 contained more diversity with species present with 5 EPT taxa sampled however, lack of water likely has an effect on species at this site as well. B(W) contained 15 EPT taxa of which 12 are classified as intolerant of poor water quality. The water quality at this site is sufficient to support sensitive benthic macroinvertebrates.

Two sites on Starvation Canyon Creek, STV and STV-10, were sampled and had EPT index values of 20% and 21% respectively. Both sites contained many EPT taxa and intolerant taxa, which suggests favorable water quality.

Water Pipe Canyon Creek contained 3 sampling site locations WP, WP-1, and WP-2 which all had high EPT index values. Heptageniid mayflies were observed at WP and WP-1, which suggests a lack of metals pollution at the site. While no heptageniid flies were observed at WP-2, may intolerant EPT species were present.

Sites WN-01, WN-04, and WN-07 on Winter's Creek had high EPT values (31%, 32%, and 30% respectively). High EPT values at these sites and some taxa intolerant of poor water quality suggest that water quality is not limiting benthic macroinvertebrates at these sites.

California Creek was sampled in 2023 and had 10 EPT taxa present and a EPT index of 30%. Mahala Creek was sampled and had 7 EPT taxa present and an EPT index of 22%. Fourteen EPT taxa were present at Foreman creek during the sampling event giving it an EPT value of 32%. Water quality at these sites is sufficient to allow sensitive taxa to persist.

## Finding

**Indicator 1:** Sampling in selected streams on the Humboldt-Toiyabe indicate stream ecosystem integrity is being maintained.

**Indicator 2:** Macroinvertebrate index values in selected streams on the Humboldt-Toiyabe indicate stream ecosystem is being maintained.

## **MON-FOCAL-SPECIES-04: How is the abundance and distribution of invasive annual grasses (e.g. *Bromus tectorum* (cheatgrass)) changing over time? (36 CFR 219.12(a)(5)(ii, iii, vi))**

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

Data source: Multi-Resolution Land Characteristic Exotic Annual Grass Tool.

## Monitoring Results

**Indicator 1:** The spatial extent of invasive annual grasses for 2022 and 2023 was mapped using 5% or greater as a threshold of density. In 2022, invasive annual grass cover,  $\geq 5\%$ , extended approximately 2.4 million acres, 38% of the Forest. In 2023, invasive annual grass extended approximately 2.6 million acres, 41% of the Forest. The mapped acreage was not exclusive to *Bromus tectorum* (cheatgrass), but instead encompasses all invasive annual grasses using the Multi- Resolution Land Characteristic Exotic Annual Grass Tool. The other

major invasive annual grass on the Humboldt-Toiyabe is *Taeniatherum caput-medusae* (medusahead).

### **Finding**

**Indicator 1:** Invasive annual grasses continue to extend and expand throughout the Forest. Continued treatment and monitoring of grasses like cheatgrass and medusahead is recommended.

### **MON-FOCAL-SPECIES-05: What management actions have contributed to the protection/enhancement, or the degradation of important large ungulate migration corridors? (36 CFR 219.12(a)(5)(iii))**

**Indicator 1: Number, types, and locations of new structures and sustained substantial disturbances in identified migration corridors.**

Data source: Utilizing NDOW Mapped migration corridor layers, WIT, FACTS.

**Indicator 2: Number and type of habitat improvement efforts (fence removal/retrofitting/markings, habitat improvement, fuels treatments, land acquisition etc.) that occurred in identified migration corridors.**

Data source: Utilizing NDOW Mapped migration corridor layers, WIT, FACTS.

### **Monitoring Results**

#### **Indicator 1:**

No new structures were identified within mapped large ungulate migration corridors. Eleven instances of road maintenance were the only identified substantial disturbance, affecting 24.8 acres of migratory corridor habitat. However, these disturbances would be of short duration (i.e. hours to several days) and not have sustained effects.

#### **Indicator 2:**

Habitat improvements totaling 13,269 acres were conducted in large ungulate migratory corridors. These consisted of beaver dam analog installation (2 projects - 90ac), fuels treatments (4 projects - 2207ac), invasive plant treatments (5 projects - 8577ac), prescribed fire (2 projects - 423ac), and seeding (2 projects - 1972ac).

### **Finding**

#### **Indicator 1:**

The current data sets used to monitor impacts to large ungulate migration corridors does not sufficiently capture all impacts that may be present. While this monitoring effort does not indicate a need for change to the forest plan, it likely does not take all disturbances into consideration.

Future monitoring efforts should ensure that all departments and associated databases be included in the assessment (i.e. mining, engineering, recreation, lands, special uses etc.) to ensure that the full suite of potential disturbance is analyzed.

**Indicator 2:**

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. The current monitoring protocol adequately captures beneficial projects within identified large ungulate migration corridors. This is the initial monitoring period, subsequent efforts will demonstrate either increased, decreased, or static efforts towards improvement of these habitats.

**MON-FOCAL-SPECIES-06: What management actions have contributed to the protection/enhancement, or the degradation of important greater sage-grouse habitat (includes Bi-state sage-grouse)? (36 CFR 219.12(a)(5)(iii))**

**Indicator 1: Number, types, and locations of new structures and sustained substantial disturbances in greater sage grouse Suitable (Bi-state) or Priority and General Habitat Management Areas (PHMA, GHMA).**

Data source: NDOW Lek survey data, HAF, WIT, FACTS.

**Indicator 2: Number and type of habitat improvement efforts (fence removal/retrofitting/markings, habitat improvement, fuels treatments, land acquisition etc.) that occurred in sage grouse Priority and General Habitat Management Areas (PHMA, GHMA).**

Data source: NDOW Lek survey data, HAF, WIT, FACTS.

## Monitoring Results

**Indicator 1:**

No new structures were identified within mapped within greater sage-grouse suitable (bi-state) or priority and general habitat management areas (PHMA, GHMA – greater sage-grouse). Seven instances of road maintenance were the only identified substantial disturbance, affecting 1503 acres of greater sage grouse habitat, and 4.3 miles of roads in suitable bi-state sage grouse habitat. However, these disturbances would be of short duration (i.e. hours to several days) and not have sustained effects.

**Indicator 2:**

Habitat improvements totaling 34,794 acres were conducted in greater sage grouse habitat, and 2381 acres of bi-state sage-grouse habitat. These consisted of: invasive plant treatments (1876ac Greater SG-2 projects; 1877ac bi-state SG-2 projects), Fence marking (12,596ac – greater SG-3 projects; 4.6 miles bi-state SG-1 project), Conifer thinning (16,463ac greater SG-9 projects; 504ac bi-state SG-2 projects), Seeding (1545ac greater SG –1 project), targeted grazing (535ac- greater SG-3 projects), and prescribed fire (1779ac- greater SG – 3 projects).

## Finding

**Indicator 1:**

The current data sets used to monitor impacts to sage-grouse habitat does not sufficiently capture all impacts that may be present. While this monitoring effort does not indicate a need for change to the forest plan, it likely does not take all disturbances into consideration.

Future monitoring efforts should ensure that all departments and associated databases be included in the assessment (i.e. mining, engineering, recreation, lands, special uses etc.) to ensure that the full suite of potential disturbance is analyzed.

**Indicator 2:**

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. The current monitoring protocol adequately captures beneficial projects within identified sage-grouse habitats. This is the initial monitoring period, subsequent efforts will demonstrate either increased, decreased, or static efforts towards improvement of these habitats. However, more consistency in how some metrics are entered into the database (i.e. fence marking; acres vs. Miles) will be necessary in the future to accurately describe beneficial effects.

## **Threatened and Endangered**

### **MON-T&E-01: How are forest management strategies effecting ecological conditions that contribute to recovery of T & E species? (36 CFR 219.12(a)(5)(iv, vi))**

**Indicator 1: Essential projects completed.**

Data source: WIT

**Indicator 2: Species specific impacts from management activities (Effectiveness monitoring) Working group reports.**

Data source: Monitoring reports, Watershed Improvements Tracking database

### **Monitoring Results**

**Indicator 1:** No essential projects completed.

**Indicator 2:**

*Sierra Nevada yellow-legged frog and Yosemite toad*

Grazing of livestock on occupied and critical habitat of Yosemite toad (YT) and Sierra Nevada Yellow-legged frog (SNYLF) on the Carson and Bridgeport Ranger Districts is likely to have an adverse effect to these species. There are 7 allotments with occupied breeding habitat and/or critical habitat for Yosemite toad and 3 allotments with occupied and/or critical habitat for SNYLF. These allotments are monitored on an annual basis for compliance with the forest plan. In 2022 and 2023, all allotments were in compliance with the forest plan utilization standards. However, in 2022 the Forest Service did exceed stream

bank disturbance standards outlined in the Sierra Nevada Amendment by 7% on one allotment. In 2023, this non-compliant allotment was rested.

#### *Lahontan cutthroat trout and bull trout*

Grazing of livestock in allotments with occupied Lahontan cutthroat trout streams is likely to have an adverse effect to the species. Several districts on the Humboldt-Toiyabe manage the grazing of livestock within occupied LCT waterbodies. Each year monitoring occurs to determine compliance with the Forest Plan. In 2022, allotments with LCT on the Austin-Tonopah, Carson, Bridgeport, and Santa Rosa Ranger Districts were in compliance with the Forest Plan. On the Mountain City-Ruby Mountain-Jarbidge district ten allotments were not monitored for end of season utilization measures, but the remaining were in compliance with the Forest Plan.

In 2023, all allotments with LCT on the Austin-Tonopah, Carson, Santa Rosa ranger district were in compliance with the Forest Plan. One allotment on the Bridgeport Ranger District was not in compliance with the Forest Plan due to an exceedance of stream bank disturbance by 12 %. This creek on the allotment where this occurred will be rested in the 2024 season. In the Mountain City-Ruby Mountain-Jarbidge district seven allotments were not monitored for end of season utilization measures, the remaining allotments were in compliance with the Forest Plan.

Grazing of livestock in allotments with occupied Bull trout streams is likely to have an adverse effect to the species. In both 2022 and 2023, monitoring showed that all allotments complied with the forest plan.

#### Fuels Reduction Monitoring Reports

The Forest Service began implementation of the Marine Mountain Warfare Training Center Forest Restoration Project in 2022 and 11 units are scheduled to be treated. The project area contains listed species: Sierra Nevada Yellow-legged frog, Yosemite toad, Lahontan cutthroat trout, White bark pine, and Sierra Nevada red fox. It also contains listed critical habitat for SNYLF and YT. This project was found to adversely affect SNYLF, YT, LCT, and critical habitats for YT and SNYLF. At the time of the decision, SNRF and White bark pine were proposed species for ESA listing and this project was found not likely to jeopardize the continued existence of these species. No treatments were implemented in 2022 or 2023.

#### Mineral Project Monitoring Reports

The Jerritt Canyon Exploration project on the Mountain City- Ruby Mountain-Jarbidge (MCRMJ) Ranger District was determined to adversely affect LCT within the project area for the duration of the project (7 years) beginning in 2022. However, drilling was not conducted in 2022 or 2023.

The Newcrest Resources Inc. Jarbidge Mineral Exploration project began in 2020 and continues the MCRMJ Ranger District until 2032. This project was determined to adversely affect Bull trout and Bull trout critical habitat.

The National Minerals Exploration Project began in 2022 and continues on the Santa Rosa Ranger District until 2032. This project was determined to adversely affect Lahontan cutthroat trout within the project area; however, no drilling has occurred for this project since the decision was signed.

#### Watershed improvements tracking database

Fish removal projects to suppress non-native fish in waterbodies historically occupied by threatened and endangered species are ongoing on the forest. Partnering with Nevada Department of Fish and Wildlife in 2023, non-native brook trout suppression activities occurred in Abel Creek on the Santa Rosa Ranger District. In 2022 and 2023, non-native trout suppression was performed with the California Department of Fish and Wildlife on the Bridgeport Ranger District in Silver King Creek, Silver Creek, and Stella Lake. Suppression activities open space in the habitat for threatened and endangered species to recover. These suppression activities are planned to continue in 2024 and 2025.

## Finding

**Indicator 1:** No essential projects completed.

**Indicator 2: Grazing monitoring reports indicated a need for a change in the forest plans.**

The Sierra Nevada amendment for the Toiyabe forest plan outlines specific standards for stream bank disturbance so this area of the Forest is held to a stream bank/ shoreline alteration standard of no more than 10% in TES waterbodies. Allotments not in the Sierra Nevada region of the Forest are not required to set a limit on stream bank disturbance. Rather, these portions of the forest have stream bank stabilization standards which require long term monitoring. There is a need for consistency between Forest Plans and monitoring requirements as TES species occur in all regions of the forest and should be held to similar guidelines.

Fuels and mineral monitoring reports do not indicate a need for a change in the forest plans. Watershed improvement tracking database reports do not indicate a need for a change in the forest plans.

## Recreation

**MON-REC-01: Are developed recreation sites meeting the needs, desires, and expectations of visitors? (36 CFR 219.12(a)(5)(v, vii))**

**Indicator 1: Comparison of deferred maintenance costs at developed recreation sites.**

Data Source: Infra/NRM, Frequency: 1-year

**Indicator 2: Number of campsite reservations.**

Data Source: Recreation.gov, Frequency: 1-year

**Indicator 3: Visitor satisfaction as measured by NVUM program.**

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

## Monitoring Result

**Indicator 1:** In FY2022, deferred maintenance at developed recreation sites was calculated to be approximately \$1,909,175, while in FY2023 it was calculated to be \$1,845,850. This represents an approximately \$63,325 reduction in deferred maintenance. At the beginning of FY2023, deferred maintenance was calculated to be approximately \$1,779,490, which represents a reduction in deferred maintenance of \$129,685 from FY2022 to FY2024.

**Indicator 2:** In FY2022, there were a total of 16,944 reservation actions recorded in Recreation.gov for campgrounds and picnic areas on the Forest, compared to 16,107 reservation actions recorded in FY2023. Reservations in FY2023 were 837 less than the prior year; however, most developed campgrounds and picnic area that take reservations on the Forest had shorter operating seasons during the summer of 2023 due to delayed openings due to the significant snowfall during the winter of 2022/2023.

**Indicator 3:** National Visitor Use Monitoring was last completed on the Forest during FY2021. Results were not released until well after the FY2022 monitoring plan reports. Results of the NVUM surveys in FY2021 showed that overall 94.8 percent of users on the Humboldt-Toiyabe National Forest were either “very satisfied” or “somewhat satisfied” with their visit to the Forest.

### 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. Data from the last reporting period shows that the Forest has begun reducing deferred maintenance at recreation sites through efforts such as the Great American Outdoors Act and that users are overall satisfied with their visits to the Forest. It is anticipated that deferred maintenance will be further reduced at multiple recreation sites as implementation of Great American Outdoors Act and other funded projects continues over the next 2 to 5 years. Reservations at developed campgrounds and picnic areas remain fairly steady across sites that take reservations with some variation resulting from length of season due to delayed opening dates as a result of significant snowfall. The next round of NVUM is schedule to occur in FY2026.

## **MON-REC-02: To what extent are trails providing access to the activities as intended? (36 CFR 219.12(a)(5)(v, vii))**

### **Indicator 1: Percentage of miles maintained.**

Data Source: NRM/Infra, Frequency: 1 year

### **Monitoring Result**

**Indicator 1:** In FY2022, the Forest reported approximately 1,368 miles of trail maintained or improved, while in FY2023, approximately 1,407 miles of maintenance or improvement were reported. This accounts for 37.4 percent of trail miles maintained or improved in FY2022 and 38.2 percent in FY2023. Additionally, total trail miles on the Forest increased by 20 miles from FY2022 to FY2023.

In comparison, in the last monitoring period reported miles maintained or improved were 366 miles (10.3 percent) and 687 miles (19.1 percent) in FY2020 and FY2021, respectively. In FY2020 there were 3,569 miles of trail on the Forest, which is 113 miles less than at the time of this report.

### **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. Results over the last reporting period show a significant increase in the percentage of total miles maintained or improved on the Forest. Additionally, the Forest has added over 80 miles of new trail to the system, increasing access and opportunity for the public. This is due to factors including addition of trails positions on multiple districts, an increase in partner contributions to maintenance and improvement of trails across the Forest, and additional training on proper yearly reporting requirements.

**MON-REC-03: Are system trails located and maintained to prevent resource degradation and to support allowable uses? (36 CFR 219.12(a)(5)(v, vii))**

**Indicator 1: Percentage of miles managed to standard.**

Data Source: NRM/Infra, Frequency: 1 year

**Monitoring Result:**

**Indicator 1:** In FY2022, the Forest reported approximately 386 miles of trail managed to standard (10.5 percent of total miles), while in FY2023, approximately 1,316 miles were reported to standard (35.7 percent of total miles). In comparison, in the last monitoring period reported miles to standard were 179 miles (5.0 percent) and 317 miles (8.8 percent) in FY2020 and FY2021, respectively.

**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. Results over the last reporting period show a significant increase in the total miles managed to standard on the Forest. This is due to factors including addition of trails positions on multiple districts, an increase in partner contributions to maintenance of trails across the Forest, and additional training on proper yearly reporting requirements.

**Wilderness**

**MON-WILD-01: Are management activities improving wilderness character in our designated wilderness areas? (36 CFR 219.12(a) (5)(v, vii))**

**Indicator 1: Scores on Wilderness Stewardship Performance per wilderness**

Data Source: Infra/NRM, Frequency: 1-year

**Indicator 2: Trend in Wilderness Character Monitoring.**

Data Source: Infra/NRM-Wilderness, Frequency: 5-years

## Monitoring Result

**Indicator 1:** Based on review of Wilderness stewardship Performance (WSP) data, scoring has continued to trend upward since the last two monitoring report periods (FY2020 and FY2022). Out of the 110 possible points (per wilderness), the average WSP score for the 23 wilderness areas the Forest is the lead Forest on was 37 in FY2022 and 38 in FY2023. Compared to average scores of 24 and 32 in FY2020 and FY2021, respectively, this current monitoring period shows a steady upward trend.

**Indicator 2:** Wilderness Character Monitoring (WCM) baselines were completed in Fiscal Years 2021 and 2022 for all 23 wildernesses where the Humboldt-Toiyabe National Forest is the responsible Forest. Baseline for the 24<sup>th</sup> wilderness on the Forest (Mokelumne) was completed by the lead Eldorado National Forest in FY2022. Since completion of the baselines, the Forest has begun to complete annual reporting as required. At this time, there has not been 5 years of data collection since baselines were completed to make determinations on the trend of wilderness character across the Forest.

## 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 for Wilderness Stewardship Performance and with Wilderness Character Monitoring trend data reported on a 5-year frequency. However, Wilderness Character Monitoring baselines were completed in FY2021 and FY2022, so 5-years of data collection and trend analysis has not yet been completed as of the time of this monitoring report. Five-year WCM trend data will not be analyzed until at least FY2026/2027.

Regarding Wilderness Stewardship Performance (WSP), the Forest has shown great improvement in scoring over the last 3 to 4 fiscal years. In FY2023, the average WSP score across the Forest was 13 points higher than reported in FY2020. In FY2022, the Mt. Rose Wilderness was the first wilderness on the Forest to meet the criteria for being managed “at or above standards” with a score of 64 points (which was also reported in FY2023). As of FY2023, three wildernesses (Carson-Iceberg, Jarbidge, Ruby Mountains) were at “approaching standard” with scores in the 50-59 range and it is expected that one or more of these will move to “at or above standard” within the next Forest Plan monitoring reporting period.

## Cultural Resources

### **MON-CULT-01: How is the Forest providing interpretive and educational opportunities to the public about cultural and historic resources? (36 CFR 219.12(a)(5)(vii))**

**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.

**Indicator 3: Number of educational, outreach, events, activities, presentations.**

Data source: District Reporting

**Monitoring Results**

**Indicators 1,2 and3:**

Currently there are 60 sites that are listed in the Heritage database for interpretation. Each of these sites have at least one interpretive panel present to designate the site and for better public understanding. There are also currently two sites that are in the process of potential interpretation in the future. This includes consultation with interested parties and/or affiliated tribes.

**Finding:**

Many of the interpretive panels are at the site and typically older than 10 years as a result, accessibility for all of the public may be factor. This could potentially be improved in the future with better technology to create an online presence. Interpretive panels may also need to be updated with updated understandings and consultations with Tribes and interested parties.

**MON-CULT-02: What is the Forest's progress in achieving a forest-wide cultural resource inventory? (36 CFR 219.12(a)(5)(vii))**

**Indicator 1: Number of significant properties evaluated, number determined eligible Number of eligible significant properties being adversely impacted by federal undertakings, looting, environmental disturbance, and other actions. This includes any ARPA investigations by Law enforcement.**

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

**Monitoring Results**

**Indicator 1:**

There are 13,154 sites that have been identified on the HTNF. Of which 824 sites are listed as eligible, listed on the register, or undetermined. 1772 sites have been listed as not eligible and 10,560 sites still need to be updated in the database from the hard copy files.

**Finding:**

Our Heritage database does not correlate to what is actually in the heritage files. Although this backlog of data management is getting better every year the Forest still has a large workload to become completely updated.

**MON-CULT-03: To what extent are management actions occurring to contribute to sustainability of cultural and historic resources? (36 CFR 219.12 (a)(5)(vii))**

**Indicator 1: Number of priority heritage sites visited by HTNF staff or site stewards.**

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

**Indicator 2: Number of priority assets with condition assessments and actions taken, if applicable.**

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

**Monitoring Results**

**Indicator 1:**

There are 122 PHAs on the HTNF. These are on a five-year monitoring program. The Forest works with the Nevada State Historic Preservation Office and their site stewardship program to help monitor these sites.

**Indicator 2:**

We are currently in year three of the five-year cycle.

**Finding**

**Indicator 1 and 2:**

At this time 73 sites have been monitored and condition assessments have updated in the database. No actions are needed currently.

**Multiple Use**

**MON-MULTI-01: How has the Forest managed Water Rights across the Forest? (36 CFR 219.12 (a)(5)(vii))**

**Indicator 1: Totals of number of water rights protested, reported on, additional evidence submitted, new claims filed, claims edited, claims withdrawn, field verified.**

Data source: Forest Databases, Water Rights and Uses Database.

**Monitoring Results**

151 California Water Claims Yearly Reports submitted before the state deadline. 12 months of Water Claims submitted to the State of Nevada by all entities were cross referenced with US Forest Service lands boundaries and water use to ensure the appropriate use of water on Federally managed Public Lands. 178 Water Use Claims in the Jarbidge Hydrographic Basin of Nevada were intensively researched and cross referenced in other resources areas databases and files for Adjudication filings. Approximately 45-days of historic files throughout Regional, Forest and District Offices were thoroughly searched and examined for Adjudication material. Approximately 20 Water Claims in California and Nevada were field verified and updated in the various databases and tracking documents. 5 Water Right Analysis were completed for Land Adjustments involving water rights, including a notable land donation to the Forest. Successfully budgeted and processed \$55,000 of water rights/claims in California and Nevada. 3 Unperfected Nevada water claims were successfully filed on per State requirements. A Forest Wide, 4 hour Water Rights training with approximately 65 participants was organized and held by Water Rights and Range staff. Tracked, and engaged on 3 State of Nevada proposed bills regarding water rights in the State Legislative Session.

**Finding**

The Forest has taken obvious efforts into closer management of the Water Rights Program including adding Water Rights related questions to this very Monitoring Report, for the first time here in this very document. Additionally, the first full- time position dedicated completely to managing the Forest’s Water Claims and Rights in California and Nevada was created, approved on and successfully filled in the 2022- 2023 period. Further, the Forest flew 2 seasonal water rights positions during this time and successfully hired one staff. The Forest has and is continually communicating the importance and need for involvement and coordination with Water Rights across projects and actions taking place across the Forest’s lands. The Forest is facilitating training opportunities across discipline areas to learn their topics’ relationship with water claims in order to spread knowledge and applicable know-how across management areas.

The H-T's data in the Water Rights and Uses Program (WRU) GIS database does not correlate to modern status and information. The Forest is successfully making progress on this backlog of data management, including filed visits, and database input. The Regional level of the WRU database is also working to update these official platforms to make the mapping and information input more accessible. In waiting for the successful completion of these changes, the Forest is working on gathering information, managing and updating water claims in California and Nevada for its own understanding as they build this new program, and is making progress.

**MON-MULTI-02: How are forest products (food, fiber, biomass, fuel, freshwater, natural medicines, minerals, etc.) that are extracted from the HTNF helping the forest meet its multiple use mandate? (36 CFR 219.12(a)(5)(vii))**

**Indicator 1: Tangible goods and products – livestock grazing (AUMs/head months), timber harvested, fuelwood sold in firewood permits, Christmas tree permits, commercial pine nut permits issued; number of operating mines/active exploration projects on an annual basis.**

Data source: Forest Databases

**Monitoring Results**

In 2022-2023 there were 466923 sheep head months and 285540 cattle head months. Only 2 Commercial pine nut permits were issued in 2022 and none in the following year. Personal Fuelwood permits totaled 5,500 CCF in 2022 and 2,783 CCF in 2023. Christmas Tree Sales (personal use) including online sales distributed 6,014 permits in 2022 and 7,864 in 2023

***Mineral Operations***

<b>Permits/Plans of Operations</b>	<b>2022</b>	<b>2023</b>	<b>2-year reporting</b>
Locatable-NOI	14	7	21
Locatable POO	12	10	22
Leasable	4	1	5
Mineral Materials	9	7	16

Cave Research & Geologic resources managed	37	64	101
--	----	----	-----

## Finding

# 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-T&E-01** indicates there is a need for forest plan revisions for the Humboldt and Toiyabe Forest Plans to provide consistency across the forest on appropriate annual streambank alteration limits on TES occupied stream banks and shorelines.

## 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-TEC-03** indicates a need to change or add to the data used to answer the monitoring question by collecting and analyzing acres of wildland fires that support resource objectives and contribute to the achievement of desired conditions. Post wildfire vegetation monitoring should be considered to better understand post fire vegetation conditions and recovery.

**MON-Soils-02** indicates a need to change data collected to address BMP monitoring program and soil biological crust monitoring. Current data sources are insufficient in identifying whether management activities are negatively affecting soil health and productivity.

**MON-FOCAL-SPECIES-01** indicates a need to readdress aspen monitoring program. There is a need to review previously used methods and decide if they should be used in coming years or design new surveys to encompass overall stand health and provide information for aspen management.

**MON-FOCAL-SPECIES-02** indicates a need to incorporate range wide management and monitoring of Whitebark pine are currently being developed at the Regional level. Coupled with project level monitoring, more accurate information is expected.

**MON-FOCAL-SPECIES-05** indicates a need to bring in other data to get a clear picture of all the possible impacts/benefits to ungulate migration corridors. Suggest that roads, engineering, recreation, and minerals data should be added to the analysis. The current data used for this analysis likely is missing some other impacts to the habitat (i.e. new mine exploration, expanding recreation sites, widening/improving roads etc.) or improvements to migratory habitat (i.e. road decommissioning, etc.)

**MON-FOCAL-SPECIES-06** indicates a need to bring in other data to get a clear picture of all the possible impacts/benefits to sage-grouse habitat. Suggest that roads, engineering, recreation,

and minerals data should be added to the analysis. The current data used for this analysis likely is missing some other impacts to the habitat (i.e. new mine exploration, expanding recreation sites, widening/improving roads etc.) or improvements to migratory habitat (i.e. road decommissioning, etc.).

Additionally, it is suggested that Migratory birds are identified as a focal species moving forward. The Intermountain Region utilizes annual survey data (beginning in 2017) obtained via the Integrated Monitoring of Bird Conservation Regions (IMBCR) to obtain trend data on more than 200 species regionally and by specific Forests and provide annual reports. This data would provide an overall picture of how all migratory bird species are doing on the Forest, as well as help identify possible habitat quality issues that may need to be addressed through management (e.g. if most of the species associated with a particular habitat type are in decline).

## Need for Changing Management Activities

**MON-TEC-01** indicates a need to expand the weeds management program through aerial herbicide and other land management strategies to limit the expansion of annual grasses.

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

**MON-Wtrshd-04** indicates 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.

## 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 Jon Stansfield 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.

Name	Title	Contact Information
Tony Bush	Forest Biologist	tony.bush@usda.gov
Marnie Bonesteel	Natural Resource Specialist	marnie.bonesteel@usda.gov
Doug Clarke	Environmental Coordinator	douglas.clarke@usda.gov
Randy Kyes	Forest Recreation/Wilderness Program Manager	randy.kyes@usda.gov
Rachel Van Horne	Fisheries Biologist	rachel.vanhorne@usda.gov
Alison Paulson	Forest Ecologist	alison.paulson@usda.gov
Nathan Clark	Forest Soil Scientist	nathan.clark@usda.gov
Elizabeth Dixon	Range Program Manager	elizabeth.dixon@usda.gov
Meagan Carter	Wild Horse and Burro Program Manager	meagan.carter@usda.gov
Darby Boe	Forest Vegetation Program Manager	darby.boe@usda.gov

Name	Title	Contact Information
Teresa Dixon	Forest Archaeologist	teresa.dixon@usda.gov
Jeff O'Connell	Forest Hydrologist	jeffrey.oconnell@usda.gov
Dirk Netz	Forest Botanist	dirk.netz@usda.gov
James Winfrey	Forest Planner	james.winfrey@usda.gov

## 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](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](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 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 public and to partners. This information is used by Forest supervisors for the effective management of their Forests and 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 USDA'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 2024 Monitoring and Evaluation report documents and discloses monitoring results from fiscal years 2022 through 2023. Each Forest Plan Monitoring and Evaluation report is intended to be a “living” document, meaning information displayed in the 2018, 2020, and 2022 report are considered as part of the 2024 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.