United States Department of Agriculture

Biennial Monitoring Evaluation Report for the Wasatch-Cache National Forest

Forest Service Wasatch-Cache National Forest March 2022

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About our Plan Monitoring Program

Purpose

The purpose of the biennial monitoring evaluation report is to help the responsible official (Forest Supervisor) 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.

Our monitoring plan 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 this report, with a cross-reference to the Uinta NF Monitoring Questions provided on page 7.

1. The status of select watershed conditions.
2. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
3. The status of focal species to assess the ecological conditions required under § 219.9.
4. The status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
5. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
6. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
8. The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)). (36 CFR 219.12(a))

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 Wasatch-Cache National Forest monitoring program was updated on November 20, 2015 for consistency with the 2012 planning regulations [36 CFR 219.12 (c)(1)]. The Wasatch-Cache National Forest Plan was administratively changed to include the updated monitoring program (Chapter 6: Monitoring and Evaluation Plan). For a copy of the current monitoring program go to https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd578954.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 guide (monitoring guide) 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 Guide is not part of the plan decision and is subject to change as new science and methods emerge. The Uinta-Wasatch-Cache National Forest monitoring guide is available at upon request. Please contact Paul Cowley at the address on Page 2. 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 and identifying updates to the plan to keep it current.

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.

Monitoring Results Summary

In 2018, two Forest Plan amendments were completed in response to issues of obsolete standards, guidelines, and definitions in the WCNF plan for Canada Lynx (Scoping, analysis, and decision information can be found at https://www.fs.usda.gov/project/?project=56203), to correct inaccurate delineation of Wilderness Management Prescriptions of a small area in the Henrys Fork and Beaver Creek watersheds in the High Uintas Wilderness.

Monitoring from 2020-2021 identified two issues in the Wasatch-Cache NF Forest Plan. The first one was that management direction was lacking on many acquired land parcels and on Forest Service lands that were inaccurately delineated during the 2003 WCNF revision. The second one was the need to allow vegetation/fuels treatments in undeveloped areas (Management Prescription 2.6) such as in pinion/juniper areas of the Forest. There were no specific forest amendments but there were Forest Plan corrections to some management prescriptions on the Heber-Kamas RD in 2021 and to Forest Plan GIS layers that were updated in 2020.

Tables 1 and 2 below summarize current adaptation recommendations for line officer consideration. Table 1 shows that three amendments are needed to manage activities on the Uinta NF. Table 2 shows that all of the monitoring questions and monitoring items do not need changes.

Table 1. Quantitative summary of adaptive management recommendations for all monitoring questions addressed in this report (3 total)

Recommendation	Yes, need for change	Unsure	No
Results inconsistent with Forest Plan direction	0	0	16
Change to Forest Plan warranted	0	0	16
Change to management activities warranted	0	0	16
Change to Plan monitoring program warranted	0	0	16
Focused assessment needed	0	0	16

Table 2. Summary of findings for each plan monitoring item (questions and indicators).

Monitoring Item	Last Year Updated	Consistency with Plan Intent[1] *Do results demonstrate intended progress of the plan components associated with this monitoring item?*	Recommendation[2] *Based on the evaluation of monitoring results, may changes be warranted?*	Type of Change(s) under consideration[2] *Where may the change be needed?*
All Monitoring Items				
Monitoring Question #4, Are vegetation conditions stable or moving toward desired future conditions?	2017	B-Uncertain	B-Uncertain	More time needed to understand effect of wooly adelgid
Monitoring Question #12 Are Forest management activities and natural events affecting watershed conditions? Indicator #2 Air Quality - Trends of lichen biomonitoring sites.	2017	A – Uncertain	A - Uncertain	The lichen monitoring interval is 10 years. Next lichen station monitoring expected to be 2026
All Other Monitoring Questions and Indicators	2017	Yes	None	N/A

[1]Plan intent:

(A) Uncertain – Interval of data collection beyond this reporting cycle (indicate date of next time this monitoring item will be evaluated);

(B) Uncertain – More time/data are needed to understand status or progress of the Plan Component(s);

[2]Refer to pages below for more details regarding any specific recommendations for change.

Past Monitoring Recommendation and Status Summary

The March 2018 monitoring and evaluation report had no recommendations for changes to the forest plan, management activities for implementing the forest plan, or the monitoring program or to conduct an assessment to determine if there exists a preliminary need to change the plan. The 2020-2021 monitoring and evaluation plan has the same recommendations for monitoring as the 2018-2019 plan with the exception of Monitoring Question #11 Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems?, Indicator #3 – Forested terrestrial where there may have been a need for management action of replanting conifer vegetation from assessments of soil burn conditions in the Francis, Snoqualmie, and Murdock fires that indicated 116 acres had high soil burn severity of which 62 acres were in burned conifer vegetation types that may take many decades of time to start the establishment of

conifer seedlings. Indicator #1 under Monitoring Question #13 (NFMA compliance: Are we complying with appropriate NFMA requirements?) states that the WCNF does not show any acreage needed to plant or to certify as being restocked.

All other items in Table 2 are still relevant and monitoring is expected to take place at the times listed for each item.

Other Considerations for Adaptive Management

No other considerations not related to the monitoring program have been identified.

Forest Supervisor's Certification

This report documents the results of monitoring activities that occurred through Fiscal Year 2021 on the Wasatch-Cache National Forest. Monitoring on some topics is long-term and evaluation of those data will occur later in time.

I have considered the monitoring and evaluation results presented in this report. Based on the monitoring, I find no need to change the 2003 Land Management Plan, as amended, at this time and, therefore, consider it sufficient to continue to guide land and resource management of the Uinta National Forest for the near future. I also find no need to change the plan monitoring program or to conduct an assessment to determine if there exists a preliminary need to change the plan.

I will examine the recommended change to management activities and the two potential needs to change the plan in response to non-monitoring related issues through further discussion with resource specialists. If changes are needed, appropriate NEPA analysis and public engagement will occur.

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Date: 2022.10.04 08:56:56 -06'00'

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David Whittekiend Date
FOREST SUPERVISOR
UINTA-WASATCH-CACHE NATIONAL FOREST

Cross-Walk between Eight Requirements and Wasatch-Cache NF Monitoring Questions

This section of the report presents a cross-walk between the eight requirements which are noted at 36 CFR 219.12(a)(5) and the Wasatch-Cache NF monitoring questions

Monitoring Question #1, Education-Information: Are we delivering key education/ enforcement messages to Forest employees and users? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

Monitoring Question #2, What is visitor satisfaction on Forest Service lands? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.

Monitoring Question #3, Is adequate access to and across the Forest being provided? Addresses Requirement v. The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives and Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #4, Are vegetation conditions stable or moving toward desired future conditions? Addresses Requirement vi. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.

Monitoring Question #5, Fuels Reduction: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the Wildland Urban Interface (WUI) and non-WUI)? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #6, Fire Management: Are natural ignitions being managed to accomplish resource management objectives? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

Monitoring Question #7, Rangeland Management: What is the extent of the change of ecological conditions due to invasive species? Do rangeland plant communities have desired species composition and is ground cover adequate? Addresses Requirement i. The status of select watershed conditions.

Monitoring Question #8, Are Forest management activities and natural events affecting the ecological conditions indicated by the status of Focal species? Addresses Requirement iii. The status of focal species to assess the ecological conditions required under § 219.9.

Monitoring Question #9, Is there a change in species distribution across the Forest? Addresses Requirement vi. Measurable changes on the plan area related to climate change and other stressors that may be affecting the plan area.

Monitoring Question #10, Are Forest management activities and/or natural events affecting ecological conditions that 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 concern? Addresses Requirement iv. 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.

Monitoring Question #11, Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems? Addresses Requirement ii. The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.

Monitoring Question #12, Are Forest management activities and natural events affecting watershed conditions? Addresses Requirement i. The status of select watershed conditions.

Monitoring Question #13, NFMA compliance: Are we complying with appropriate NFMA requirements? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities and Requirement viii. 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)).

Monitoring Question #14, Are timber management activities impairing soil productivity of the land? Addresses Requirement viii. 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)).
Monitoring Question #15, Are goods and services being provided in accordance with Forest Plan goals and objectives? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
Monitoring Question #16, National Historic Preservation Act as amended: Are cultural resources being protected as the Forest Plan is implemented and are mitigation measures sufficient prevent damage to cultural resources from project activities? Are *Historic Properties* receiving adverse effects from project implementation, vandalism, looting, and/or neglect? Addresses Requirement vii. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.

SUMMARY OF CHANGES TO THE FOREST PLAN SINCE THE 2018-2019 REPORT

In 2020-2021, there were no changes to the Forest Plan.

Summary of Vegetative Changes in 2018-2019

The largest area of vegetative changes on the Wasatch-Cache National Forest (WCNF) are from timber harvest, fuels treatments, and wildfire. In 2020 to 2021, the main vegetative change that has occurred from commercial harvest of 824 acres and 25,256 acres of fuel treatments (compared to 11,547 acres from 2018-2019) and consist of thinning, burning of piled material and broadcast burning. The purpose of these treatments is to reduce large fires, fire intensity and to create diversity in age classes on the Forest. Based on analysis of Burned Area Emergency Response reports for wildfires in 2020-2021, wildfire has resulted in 1 acre of high burn severity. Overall, there has been a small change in the vegetation across the total landscape area of the WCNF.

INFORMATION ON MONITORING QUESTIONS AND INDICATORS

Monitoring Question #1 Education-Information: Are we delivering key education/ enforcement messages to Forest employees and users? (Key Focus Areas are: OHV use, recreation user ethics, fire's role/hazardous fuels, noxious weeds, watershed health).

Finding: *No changes are needed. The Uinta-Wasatch-Cache NF delivers key education/enforcement messages to the Forest employees and users.*

Indicator #1 - Number of key messages.
Data source: *Uinta-Wasatch-Cache NF Public Affairs Officer, forms completed by teachers at the Logan Canyon Children's Forest, responses of users of the UWCNF to questions asked by Forest Service field personnel regarding whether users know the key messages that are on kiosks, and on Forest Service website and social media.*
Monitoring result: *Several activities that provided key messages occurred in 2020-2021.*

Salt Lake Ranger District – Utilizing the Project Learning Tree "Places We Live" curriculum guide, educators learned how to integrate art, science, and observation skills. Participants learned how nature journaling techniques and the "Places We Live" curriculum can be used to explore earth sciences, culture, history, math, mapping, and environmental issues. Educators continued to participate in the Naturalist Program.

Silver Lake Recreation Complex – The Silver Lake Recreation Complex and Visitor Center, at the headwaters of Big Cottonwood Canyon, offer an opportunity for visitors of all ages and abilities to interact with a diverse ecosystem within a 0.8-mile loop path. The area provides an outdoor education classroom destination site for families, tourists, and recreation hub for local communities. This area connects an urban population to their national forest. Programs, activities, interpretive displays, and walks with rangers provide opportunities for visitors to understand the importance of protecting the municipal watershed.

In 2021, these programs continued to provide, through Cottonwood Canyons Foundation (CCF), educational curriculum to visitors at the Silver Lake Visitor Center. Additionally, compliance employees were added in Mill Creek and Albion Basin through the support of partnerships with Salt Lake County and Town of Alta. Contacts made by these employees were modeled after the successful education/compliance work at Silver Lake Visitor Center to deliver key education/enforcement messages about watersheds, wildflowers, sanitation, and other visitation rules. These efforts will continue during the summer of 2022, including programming that CCF delivers, when schools resume their field trips.

Logan Canyon Children's Forest – The Logan Canyon Children's Forest is supported by the Logan Ranger District and Stokes Nature Center. Through the partnership, opportunities are provided to students of all ages to explore, learn, and develop an appreciation and stewardship of the natural world. Forest Service and Stokes Nature Center staff provide service learning and mentorship for youth. Participants engage in campground activities, presentations, demonstrations, and hands-on activities. The programs focus on activities for local underserved youth. Stokes Nature Center staff conduct informal questionnaires with participants or participant parents/guardians to gather data and feedback about programs being provided. The activities and programs reached 4680 participants during 2021.

Monitoring Question #2 What is visitor satisfaction on Forest Service lands?

Finding: *No changes are needed.*

Indicator #1 - Level of visitor satisfaction.
Data source: *No National Visitor Use Monitoring (NVUM) Surveys were conducted in 2020 or 2021 and the WCNF is currently collecting NVUM data.*
Monitoring result: *No new data has been collected. Please see FY 2018-2019 Forest Plan Monitoring assessment for most current data.*

Monitoring Question #3 Is adequate access to and across the Forest being provided?

Finding: *No changes are needed. Access is adequate.*

Indicator #1 - Miles of classified road open for public use, miles of motorized trail, miles of non-motorized trail.
Data source: *Uinta-Wasatch-Cache NF Motor Vehicle Use Map.*
Monitoring result: *At the end of FY 2021, the miles of classified roads open for public use were 1,185 miles, 3 miles more than what was reported in 2019. For the UWCNF management unit, there was no change in road miles since the UNF had 3 miles less reported in 2021. These are Forest Service public roads only and does not include State highways, administrative roads, or private roads. In 2021, the miles of motorized trails were 252, snowmobile trails were 254, miles non-motorized trails were 1,098 and ski/ snowshoe trails were 87.*

<u>Monitoring Question #4</u> Are vegetation conditions stable or moving toward desired future conditions?

Finding: *No changes are needed.*

Indicator #1 Forested Vegetation –Extent of insect/disease infestations.
Data source: *Forest Health Protection Annual Aerial Detection Survey2016, FACTS Database, accomplishments recorded for FY 2021.*
Monitoring result: *In 2021 on the Wasatch Cache NF, several vegetation treatment activities have been accomplished. These treatments are primarily the result of management actions taken to move toward desired future conditions. These activities include 824 acres of commercial timber sales, 3,454 acres of rearrangement of fuels, and 516 acres of pile burning. This accounts for a total 4,794 acres that were treated on the WCNF or roughly 0.2% of the 2,314,498 acres encompassed by the forest boundary.*

As shown in the following table, the forest is experiencing some level of mortality due to various pathogens has remained relatively constant with one exception. The balsam wooly adelgid is an invasive insect that has moved into the WCNF from Idaho, and is originally from Europe, and it was first discovered on the forest in 2017. Where this insect is found, the mortality rates in these areas is categorized as mostly moderate to severe. This categorization shows that 11% to 50% of the trees on these acres are experiencing mortality from this insect. Currently, there are no ways of minimizing the long-term effects of balsam wooly adelgid upon native ecosystems. Currently, aerial detection surveys are not providing full forest coverage. The surveys were deemed too costly and time consuming and are now only being flown in areas of high mortality or at areas at the request of the Forest. While the Uinta NF is regularly being monitored due to the detection of balsam wooly adelgid, the Wasatch Cache NF isn't.

Level of Mortality Due to Various Pathogens																				
Damage Agent	Affected Species	Estimated Acres (a)(b) within insect mortality by year																		
		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Spruce Beetle	Spruce	1586	5065	59	2	2	110	788	843	780	5055	24602	56244	51867	68469	42209	55460	17560	0	3692
Fir Engraver Beetle	Subalpine and White Fir	214	6966	223	35	1742	35	27	148	77	7	189	2234	156	22	202	10	504	1	222
Subalpine Fir Mortality Complex	Subalpine and White Fir	7854	3039	4463	5878	28639	8817	3504	4419	1866	2064	2869	9120	6576	5507	1841	6797	3470	194	1220

Mountain Pine Beetle	Lodgepole, Limber and Ponderosa Pine	31495	104255	6583	42163	250262	232706	205471	221704	44782	23073	13918	2841	2970	658	112	1803	3644	0	248
Douglas-fir Beetle	Douglas-fir	2141	3824	1236	189	2705	776	261	1090	1062	794	943	998	600	359	639	284	184	231	265
Ips Beetle	Pinyon Pine	0	0	0	0	0	0	0	0	0	0	0	0	15	2	0	0	0	0	169
Balsam Wooly Adelgid	Subalpine and White Fir	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1955	9967	20462	595	7261

(a) Acres were estimated through GIS analysis for land ownership, mid-scale vegetation, and insect damage type.

<u>Monitoring Question #5</u> Fuels Reduction: Are fuels reduction projects protecting property, human health and safety, and reducing the potential for unwanted fire effects (in the Wildland Urban Interface (WUI) and non-WUI)?

Finding: *No changes are needed.*

All fuels projects are designed to alter fire behavior in order to meet one or more of the following objectives: protecting property, human health and safety and reducing the potential for unwanted fire effects. From 2020-2021, the Wasatch-Cache implemented 25,256 acres of treatments (Tables 1), a significant increase from past years. These treatments, combined with past fire footprints, have been successful at altering fire behavior in a way that reduced unwanted fire effects, increased firefighter safety, and allowed for more fire management options (which makes it easier to protect property and life).

When a wildfire burns through a fuels treatment, we assess whether or not that treatment was effective. In the last 2 years, 11 fires have started in or burned into 12 different fuels treatments (Table 2). Fuels treatments have been consistently effective at altering fire behavior, increasing safety for firefighters, increasing suppression opportunities, and contributing to the control and management of a fire. Exceptions to this include times when there are extreme fire weather conditions, enough time has passed that vegetation has regrown, exceeding the "lifespan" of the treatment, or conditions are such that the fire would have remained small regardless of the fuels treatment. In 2020-2021, there were several fire/fuels treatment interactions that occurred in campgrounds or along roads where the treatment did not necessarily alter the fire behavior but allowed firefighters to work safely in the area due to fewer hazard trees.

While we can show progress and cite specific examples of fuels reduction projects protecting property, human health and safety and unwanted fire effects, there is still a lot of work that needs to be done to reduce the risk of uncharacteristically large and severe wildfires.

In 2021, there was a shift in planning for fire suppression and reduction. This shift is referred to as Potential

Operation Delineations (PODS). This is an all- lands approach, working with state and local governments, to identified potential fire breaks across the landscape. Emphasis in the future will be to more closely examine these breaks and expand upon them through conducting fuel treatments to reduce fire spread and then treat interior blocks to reduce fire intensities.

Indicator #1 Acres of hazardous fuels reduction in WUI and non-WUI.
Data source: *Forest Service Activity Tracking System database*
Monitoring result: *From 2020-2021, the WCNF implemented 25,256 acres of fuels reduction treatments compared to 13,140 acres in 2018-2919. In WUI areas, 14,983 acres were treated in 2020-2021 compared to 3,047 acres in 2018-2019 and in non-WUI areas, 10,273 acres were treated in 2020-2021 compared to 10,093 acres treated in 2018-2019.*

Table 1. Total number of acres of fuels treatments implemented on the Wasatch-Cache from 2020 to 2021.

	2020	2021	Total
WUI	12,009	2,974	14,983
Non-WUI	5,284	4,989	10,273
Total Acres	17,293	7,963	25,256

Indicator #2 Fire behavior and opportunities for suppression. Measure when a wildfire enters a fuels treatment that is less than 10 years old. Report every 2 years.

Data source: *Fuel Treatment Effectiveness Monitoring database*
Monitoring result*: As shown in the table below, in 2020 and 2021, 3 of 11 fires resulted in fire behavior changing as a result of vegetation treatments and in 10 of 11 fires vegetation treatments contributed to the control and/or management of fire. More details and maps of fires that have interacted with fuels treatments can be found in the Fuel Treatment Effectiveness Monitoring Database.*

Table *2. Fires on the Wasatch-Cache that started in or burned into fuels treatments from 2020 to 2021.*

Fire	Fire Year	Treatment	Treatment Date	Treatment Acres Burned	Did fire behavior change as a result of treatment?	Did treatment contribute to the control and/or management of fire?
Spectcal Lake	*2021*	*Upper Provo Ph. 4 thin/pile/burn*	*10/25/19*	*0.1*	*no*	*yes*
Condi	*2021*	*Stansbury lop and scatter*	*9/24/20*	*0.1*	*yes*	*no*
First Waterfall	*2020*	*Logan wildlife improvement thinning*	*9/23/18*	*0.1*	*no*	*yes*
Redman	*2020*	*Redman CG thin/pile/burn*	*11/30/11*	*0.1*	*no*	*yes*
		SL County hazard tree	*7/1/19*	*0.1*	*no*	*yes*
Margie Lake	*2020*	*Heber-Kamas CG Fuels reduction*	*11/4/19*	*0.1*	*no*	*yes*
		Kamas CG Fuels FY17	*7/24/17*	*0.1*	*no*	*yes*
		Trial Lake timber sale	*11/18/15*	*0.1*	*no*	*yes*
Trial	*2020*	*Heber-Kamas CG Fuels reduction*	*11/4/19*	*0.1*	*no*	*yes*
		Kamas CG Fuels FY17	*7/24/17*	*0.1*	*no*	*yes*
		Trial Lake timber sale	*11/18/15*	*0.1*	*no*	*yes*
Washington	*2020*	*Trial Lake timber sale*	*11/18/15*	*0.1*	*no*	*yes*
Upper Provo	*2020*	*Upper Provo Phase 3*	*10/25/19*	*1.2*	*yes*	*no*
Jean Lake	*2020*	*Heber-Kamas CG Fuels reduction*	*11/4/19*	*0.1*	*no*	*yes*
		Ledgefork Trailhead	*7/24/17*	*0.1*	*no*	*yes*
Upper Setting	*2020*	*Upper Provo RX*	*11/1/18*	*0.1*	*yes*	*yes*
		Upper Provo Hazard Tree	*8/20/17*	*0.1*	*yes*	*yes*
FS Road 134	*2020*	*Heber-Kamas CG Fuels reduction*	*11/4/19*	*0.1*	*no*	*yes*

<u>Monitoring Question #6</u> Fire Management: Are natural ignitions being managed to accomplish resource management objectives?

Finding: *No changes are needed. Conditions must be favorable in order to manage fires for resource objectives, many of which are outside of our control (such as weather, available resources, and fire location). Therefore, the percentage of natural ignitions that can be managed for resource objectives may vary significantly from year to year. However, the goal is to see a long-term trend of increasing the percentage of fires that can be managed to meet resource objectives.*

In the last 2 years, we have not managed any natural ignitions to accomplish resource management objectives. Conditions must be favorable in order to manage fires for resource objectives, many of which are outside of our control (such as weather, available resources, fire location, etc.). From 2020-2021, managing for resource objectives was not an option due to the COVID-19 pandemic and the severity of the fire season on a national

scale.

In addition to managing wildfires for resource benefit, we hope to see a trend of increasing percentages of acres with resource benefits from natural ignitions. We can increase these percentages by managing more fires for resource objectives and implementing vegetation projects to reduce unwanted fire effects. Over the last two years, the Wasatch-Cache only had one natural fire over 10 acres – the Neffs fire (60 ac). This fire was not considered beneficial due to its proximity to the wildland urban interface and the potential for weed invasion/expansion, but it did reduce fuels in a high-risk area which could benefit the nearby community in the future.

Indicator #1 Percent of natural ignitions with identified resource management objective.
Data source: *Wildland Fire Decision Support System database*
Monitoring results: *In 2020-2021, 0% of natural ignitions were managed with a resource management objective.*

Indicator #2 Percent of natural ignition acres with resource benefit.
Data source: *Forest Service Activity Tracking System database, UWC fire perimeter GIS data*
Monitoring results: *In 2020-2021, 0% of natural ignitions were beneficial for natural resources on the WCNF.*

<u>Monitoring Question #7</u> Rangeland Management: What is the extent of the change of ecological conditions due to invasive species? Do rangeland plant communities have desired species composition and is ground cover adequate?

Finding: *No changes are needed. The Forest has been making efforts to control weeds on the planning area. Riparian areas and upland conditions of range allotments are overall in satisfactory conditions. Satisfactory condition is defined as meeting desired conditions or trending towards desired condition. Desired condition is defined as the 2003 Forest Plan Standards and Guidelines and having the desired plant communities.*

Indicator #1 Estimated acres infested with noxious weeds.
Data source: *Visual observations and/or treatment reports from seasonal noxious weed USFS crews.*
Monitoring results: *On the Salt Lake Ranger District, the Stansbury Mountains are considered a high use recreation area and noxious weeds are increasing in many places that are now more easily accessible. These new infestations are aggressively treated with the aim to keep them controlled and small. Hoary cress, Houndstongue, field bindweed, squarrose knapweed, and Canada Thistle are the most common invasive weeds found in this area. Long-term monitoring studies indicative of vegetative and ground cover conditions are in overall satisfactory condition and noxious weed infestations account for less than 5% of the Stansbury Mountains. On the Kamas and Evanston/Mt. View Ranger Districts, current noxious weeds infestations are being controlled and new noxious weed infestations are found almost on an annual basis. Mirror Lake corridor is a high use recreation area and noxious weeds are increasing in the area. These new noxious weed infestations are aggressively treated to keep infestations controlled and small. Musk Thistle, Yellow Toadflax, Bull Thistle are the three top invasive weeds found on the WCNF and noxious weed infestations account for less than 5% of the Kamas RD. On the Evanston/Mt. View Ranger District, current noxious weeds infestations are decreasing in number and size. Long-term monitoring studies indicative of vegetative and ground cover conditions are in overall satisfactory condition and noxious weed infestations account for less than 1% of the Evanston/Mt. View Ranger District. On the Logan and Ogden Ranger Districts, current noxious weed infestations are typically found along transportation corridors (eg. roads and trails) or recently disturbed areas*

(e.g. project work, timber sales, and prescribed burns) and are being controlled through partnerships/contracts. New infestations (eg. Canada Thistle, Dyers Woad, Houndstoungue, Knapweed, Leafy Spurge, Musk Thistle, and White Top) are prioritized for treatment to contain or eradicate these populations. Noxious weed infestations account for approximately 5-7% of the Logan and Ogden Ranger Districts.

The last time weeds were inventoried on the WCNF was in 2015 by USU and based on acres inventoried, the amount of weed infested area for Ogden and Logan Ranger Districts were 5.7 and 8.3 percent. Weeds have been treated on each District along high use areas such as roads and trails.

Acres of Noxious Weed Inventory and Treatments						
Ranger District	***2015 USU Re-inventory***		***Weed Treatment Acres[1]***			
	Inventoried Acres	***Weed Infested Acres***	***2018***	***2019***	***2020***	***2021***
Salt Lake	*N/A*	*N/A*	*0*	*24*	*331*	*313*
Kamas[2]	*N/A*	*N/A*	*742*	*1107*	*1139*	*Not Reported[3]*
Evanston-Mt.View	*N/A*	*N/A*	*0*	*106*	*100*	*103*
Ogden	*1,773*	*148*	*233*	*163*	*57*	*285*
Logan	*7,429*	*422*	*30*	*137*	*467*	*396*
Totals	*9,202*	*570*	*265*	*570*	*2,092*	*1,097*

[1] From USFS FACTS database.
[2] The value includes Heber and Kamas Ranger Districts because they are reported as one District in FACTS.
[3] Data not reported because of personnel change.

Indicator #2 Riparian and upland condition and trend.
Data source: *There are only three allotments on the Heber-Kamas District located on the Wasatch-Cache NF which include Curry, Kamas Valley and Weber River. Long-term monitoring studies were established or re-read on many allotments as shown in the Table below.*

Number of Range Study Sites Read or Established			
Ranger District	***Years***	***Number of Study Sites***	***Allotments Studied***
Salt Lake	*2018-2019*	*0*	*No allotments studies due to change in personnel.*
	2020-2021	*98*	*Blackbunch, Boxelder, Grantsville North, Grantsville South, Rush Valley, and Skull Valley*
Kamas	*2018-2019*	*63*	*Curry, Kamas Valley and Weber River*
	2020-2021	*103*	*Curry, Kamas Valley and Weber River*
Evanston-Mt.View	*2018-2019*	*750*	*Burnt Fork, Beaver Creek, Poison Mountain, Red Mountain, West Fork-Smiths Fork, Blacks Fork, West Fork-Blacks Fork, Larson, Gold Hill and others*
	2020-2021	*600*	*East Fork-Smiths Fork, Gilbert Creek, Gold Hill, Humpy Creek, Meadow Creek, Poison Mountain, Stillwater, West Fork Bear River, West Fork-Smiths Fork, and others.*
Ogden	*2018-2019*	*5*	*Dry Bread, Three Creeks*

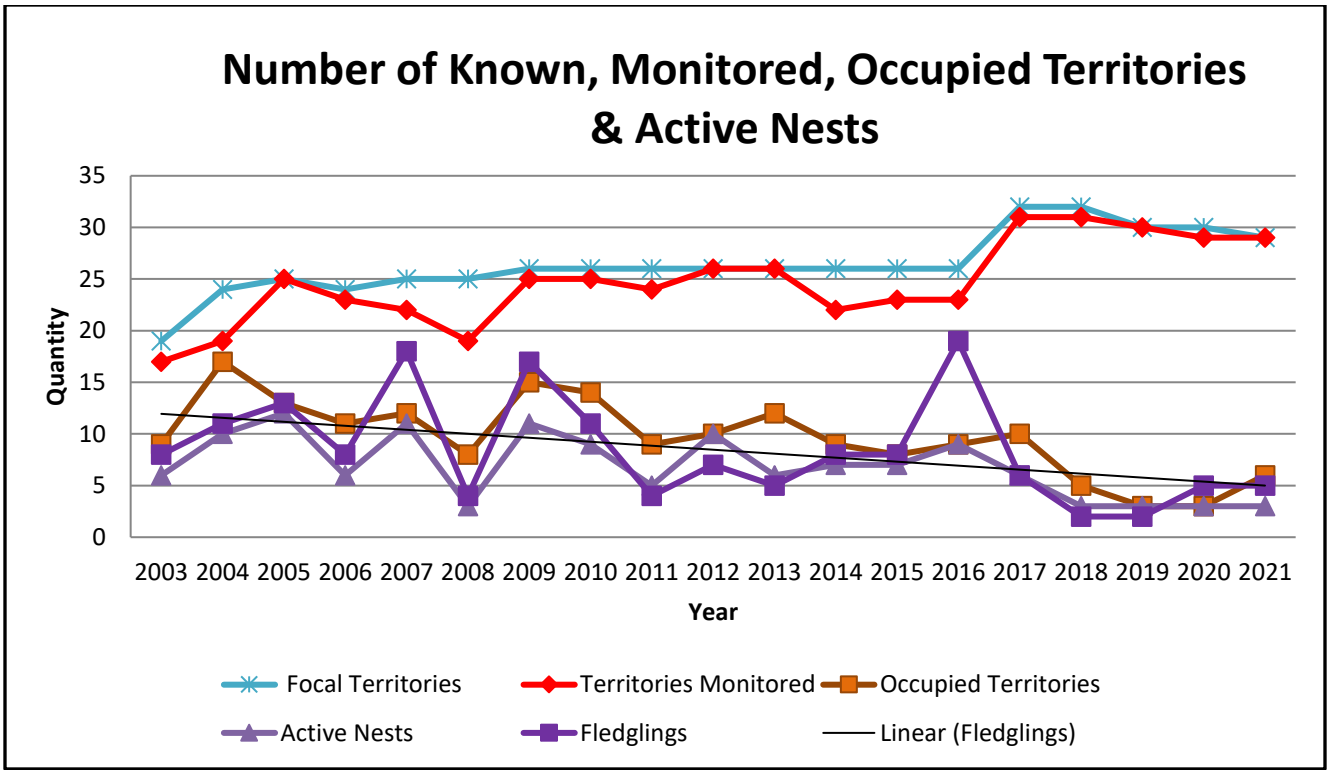
	2020-2021	*2*	*Three Creeks*
Logan	*2018-2019*	*15*	*Boulder Mountain, Cottonwood, Cowley Canyon, Franklin Basin, Logan Canyon, Long Hollow, Millville, North Rich, Providence, Ricks Steel, Saddle Creek, South Cache, White Rock*
	2020-2021	*18*	*Logan Canyon, Willard Basin, Wood Camp*

Monitoring results: *On the allotments monitored on the WCNF, the vegetative communities associated with the allotments are overall in satisfactory condition. Satisfactory condition is defined as meeting desired conditions or trending towards desired condition. Desired condition is defined as the 2003 Forest Plan Standards and Guidelines and having the desired plant communities.*

<u>Monitoring Question #8</u> Are Forest management activities and natural events affecting the ecological conditions indicated by the status of Focal species?

Findings: *No changes are needed. Management activities over the past 18 years were unlikely to cause significant population level impacts to goshawk reproductive activities and success rates. Although trends in fish populations vary by drainage, no changes are needed since the reasons for downward trends are from natural events or from stocking decisions not from issues with management direction.*

Indicator #1 Active Goshawk territories.
Data source: *2020-2021 Goshawk survey results of monitoring a subset (approximately 50%) of the known goshawk nesting territories and comparison to goshawk inventories from 2003. Surveys of territories are based on protocols for the UWCNF that have been adapted from the Northern Goshawk Inventory and Monitoring Technical Guide (Woodbridge & Hargis, Northern goshawk inventory and monitoring technical guide, 2006).*
Monitoring results: *Over the last five years, the WCNF shows an overall upward trend in the number of focal and monitored focal territories, but a downward trend in occupied territories (OT), active nests (AN), and fledgling success in total number of fledglings (FS). In 2021, OT was higher than the previous three years (2018-2020), but lower than any other years. AN was same as the last three years (2018-2020) that have been marking the lowest record since data collection began for the Planning Area. Fledgling Success (FS) was same as 2020 but was better than 2019 and 2018 that marked the lowest record. Looking at the data from the beginning of the data collection in 2003, a shift occurred around 2009. Before 2009, OT and AN had flat trend lines and FS was increasing. After 2009, OT, AN, and FS started to show decreasing trends.*



Known focal territories, monitored focal territories, occupied focal territories, active focal nests, and young fledged in focal territories on the Wasatch-Cache Planning Area between 2003 and 2021.

Experts generally agree that colder and wetter springs limits goshawk reproduction (Bloxton 2002, Ingraldi 1998, Patla 1997, Kostrzewa and Kostrzewa 1990). The winters of 2015/2016, 2016/2017, and 2018/2019 had abundant snow accumulations and may have affected goshawk reproduction. However, the winter of 2017/2018 was not an abundant snow year, but EMVRD still showed exceptionally low OT, AN, and FS numbers. The winter of 2019/2020 were not an abundant snow year either, but OT and AN were still low although the FS number was better compared to the previous three years. Other districts in the Planning Area showed lower than average metrics as well for 2018 and 2020. The winter of 2020/2021 was very dry, and the spring and summer of 2021 was extremely hot and dry. OT in 2021 was higher than 2020, but AN and FS were same as 2020. Because metrics are staying low for the last five years under various weather patterns, weather may not solely be responsible for the downward trends over the last five years.

Management activities over the past 18 years were unlikely to cause significant population level impacts to goshawk reproductive activities and success rates. Management activities mostly occur in general management areas, and activities require environmental analysis, thereby reducing and mitigating negative effects to goshawks. Approximately 18% of the Wasatch-Cache Planning Area and 63% of the Evanston Mountain View Ranger District (EMVRD) is designated as wilderness and roadless areas. EMVRD has the most known goshawk territories within the Planning Area. Management of wilderness and roadless areas requires increased approvals from the Forest Supervisors, Regional and Washington Offices; therefore, management in these areas occur less frequently.

In recent years, the Uinta-Wasatch-Cache National Forest, especially the Evanston-Mountain View Ranger District, has seen impacts within its forested lands as a result of mountain pine and spruce beetle infestations. In some areas, these infestations have reached epidemic levels that has resulted in substantial mortality to the

Forest's coniferous tree species including Lodgepole pine (Pinus contorta) and Engelmann spruce (Picea engelmannii). This is a continuation of beetle spread that we have been experiencing over the last decade into areas that were previously not experiencing widespread mortality from bark beetles. The current estimate of beetle-killed lodgepole pine on the North Slope is approximately 80-90%. The both the mountain pine beetle and spruce bark beetle moved across the north slope of Uinta Mountains in a west-to-east wave. An epidemic outbreak of mountain pine beetles has begun in the early 2000s and moved very rapidly to the west side of the district peaking in 2007 earlier than some of the eastern portions of the district peaked in 2008-2009. Spruce bark beetle has moved west-to-east much more slowly, with some of the higher elevation spruce on the Mountainview side peaking in very recent years. The beetle epidemics are likely one of the causes for downward trends in breeding activities and success in the planning area.

Goshawks prefer to nest in mature, large diameter trees in closed canopy forests. The dead lodgepole trees no longer provide a closed canopy; therefore, this open canopy may be causing goshawks not to nest in beetle-killed areas and shifting nesting areas and nesting trees to other species. More consistent and long-term field data is needed to determine if this change will continue in the future, but a shift to an alternative tree species is logical since goshawks use mature trees for nest building and live, mature lodgepoles are less abundant than they once were. Goshawks hunts in primary in mature forest. As the area of mature forests decrease due to beetle kills, goshawks are required to hunt over larger areas which increase intra-specific competitions among goshawks. Increased intra-specific competitions could result in decreased number of nesting goshawks or in decreased reproductive successes.

The Intermountain Bird Observatory (IBO) has found that goshawks metrics have been decreasing region-wide for several years. After a discussion with a few FS Intermountain Region biologists, the IBO requested 2017-2020 goshawk data from FS Intermountain Region forests to determine if broader patterns are apparent, inform management actions, and help drive new science priorities for goshawks. The IBO concluded that the region is inconsistent in their monitoring approaches, protocol, and level of monitoring; therefore, limits the ability for region-wide quantitative comparisons. The IBO used a qualitative comparison approach and reported that no forest in the region had increasing population levels, and more than half of the forests are reporting declines in goshawk breeding. The managers for many forests in the region are concerned about a decreased aspen viability, and the IBO suggested a comprehensive look into the goshawk-aspen system. In the case of the Uinta-Wasatch-Cache NF, the decline is believed to be the result of forest structural changes related to pine beetles. IBO also suggested a region wide program to collect high quality genetic samples to evaluate inbreeding depression and broad time-scale integration of birds across the region since there are no evidence for whether new breeding goshawks are recruited from within or outside of the region (Miller et al. 2020).

Recommendations (but not changes to the Forest Plan)

1. *Begin comparing nesting activities by tree species*
2. *Place cameras at predictable nesting sites (e.g. a territory that only has one known nest that consistently fledges or has nest activity) to answer the question if occupied territories with inactive nests are a result of early nest failures occurring prior to monitoring.*
3. *Search for more territories in the West Fork Black Fork Drainage (EMVRD). It would be interesting to see if a territory is present. This is one of few places on EMVRD where there is not a known territory.*
4. *Consistently monitor Salt Lake focal territories. Monitor locations for seven consistent years so that unoccupied territories can be removed from monitoring list. Look for new territories. In the future these areas could replace current focal territories (as they are removed) because they are likely unoccupied. It would be good to have these removed (if true); therefore, monitoring these each year is important. It would be unfortunate to miss a year and have to start the seven years of monitoring again. To have a territory removed, it must be monitored consistently for seven years and be unoccupied.*

5. *Continue to replace Focal Territories when existing ones are unoccupied for seven or more years.*
6. *If opportunity exist, join the Utah State University's genetic study.*

Indicator #2 Cutthroat Trout population estimates.

Data source: *In 2021, the Uinta-Wasatch-Cache National Forest conducted fish surveys on streams located on the Ogden Ranger District. Three of the streams were tributaries to the North Fork Ogden River, one was a tributary to the Ogden River and the remaining three were tributaries to Woodruff Creek. The Ogden River tributary surveys repeated surveys conducted in 2016 to monitor Bonneville cutthroat trout (BCT) and Forest management activities. The Woodruff Creek tributary surveys were previously monitored in 2011. The data collected in previous surveys was compared with data collected in 2021.*

Monitoring results: *Throughout these drainages, habitat conditions remain good and, in some instances, have improved. The expansion of beaver (specifically their dams) has provided critical habitat which was especially apparent in 2021 during an extended drought. In other areas, bank stability and width/depth ratios continue to improve.*

Survey Reach specific information regarding populations on the Ogden Ranger District.						
Stream	***Survey Site***	***Fish Species***	***Previous salmonids per mile***	***2021 salmonids per mile***	***Comments***	***Reach Trend***
Cold Canyon	*53*	*cutthroat*	*263*	*16*		*Down*
Cutler Creek	*52*	*cutthroat*	*179*	*131*		*Stable*
		Sculpin	*abundant*	*abundant*		*Stable*
South Fork Wolf Creek	*51*	*cutthroat*	*865*	*1005*		*Stable*
Wheeler Creek (Snowbasin)	*31*	*cutthroat*	*510*	*131*	*Reach is high in the drainage and low flows definitely impacted fish populations.*	*Down*
Big Spring Fork		*cutthroat*	*0*	*1772*	*The reach in 2021 included a large beaver dam that held most of the fish. Fish captured in 2011 were less than 100 mm and aren't included in pop estimates.*	*Up*
Wheeler Creek	*82*	*cutthroat*	*64*	*0*	*Reach is high in the drainage and low flows due to drought impacted fish populations. Fish populations lower in the drainage appear good.*	*Down*
		Sculpin	*low*	*0*		*Down*
Sugar Pine Creek		*cutthroat*	*0*	*565*	*Beaver dams provided improved habitat in 2021.*	*Up*

Survey Reach specific information regarding populations on the Ogden Ranger District.						
Stream	***Survey Site***	***Fish Species***	***Previous salmonids per mile***	***2021 salmonids per mile***	***Comments***	***Reach Trend***
[1] Population estimates, biomass, and condition factor used to determine population trend *[2] BCT = Bonneville cutthroat trout*						

<u>Monitoring Question #9</u> Is there a change in species distribution across the Forest?

Finding: *No changes are needed.*

Indicator #1 Change from cold water to warm water species, change in terrestrial vegetation and species distribution.
Data source: *Field observations of aquatic habitat and fish population surveys*
Monitoring results: *From the results of fish population and habitat surveys, there is no indication of a change from cold to warm water species. There is no indication of a change in terrestrial species distribution.*

<u>Monitoring Question #10</u> Are Forest management activities and/or natural events affecting ecological conditions that 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 concern?

Finding: *No changes are needed. For conditions indicated by goshawk and fish surveys and for federally listed threatened and endangered species, conserve proposed and candidate species, management activities over the past 15 years were unlikely to cause significant population level impacts. For fisheries, most monitored sites indicate a stable to upward trend and where downward trends occur, they are from natural events or from stocking decisions not from issues with management direction.*

Indicator #1 Mature forest conditions and population estimates (e.g, Northern goshawk). *See Monitoring Question # 8, Indicator #1.*

Indicator #2 Aquatic and riparian condition: In-stream channel conditions and population estimates (e.g, Bonneville cutthroat trout and Colorado River cutthroat trout). *For fish abundance and condition surveys see Monitoring Question # 8, Indicator #2.*

Indicator #3 Habitat that contains other federally listed threatened and endangered species, conserve proposed and candidate species – Documentation of alterations in habitat due to management actions and natural events.
Data source: *Forest Service information in FACTS database on timber treatments, prescribed fire, wildfire, Burned Area Emergency Response (BAER) reports, and aquatic habitat improvement projects.*
Monitoring results: *On the Evanston-Mt. View District, to improve Colorado Cutthroat trout populations, aquatic ecosystems have been improved on 25 miles of stream where non-native fish were removed 25 miles aquatic ecosystems have been improved where non-native fish were removed on West Fork Smiths Fork. Bonneville cutthroat trout populations have benefited from a culvert replacement on Deadman Creek improving conditions on 2.5 miles of stream as well as a rotenone treatment to remove brook trout.*

<u>Monitoring Question #11</u> Are Forest management activities and natural events affecting the ecological conditions of terrestrial and aquatic ecosystems?

Finding: *No changes are needed. In 2020 to 2021, the main ecological change that has occurred is from vegetation changes resulting from commercial harvest of 519 acres and 25,256 acres of fuel treatments (compared to 11,547 acres from 2018-2019). Fuels treatments consist of thinning, Treatments consisted of burning of piled material and broadcast burning. The purpose of these treatments is to reduce fire sizes and intensities and to create diversity in forest age classes on the Forest. Most of these activities affected the terrestrial ecosystem by setting the seral stage of the vegetation to an earlier stage. Aquatic ecosystems have been improved on 5 miles of stream where non-native fish were removed on West Fork Smiths Fork.*

Data source for all indicators: *See Monitoring Question # 4, Indicator #1, Monitoring Question #5, Indicators #2, Monitoring Question # 6, Indicators #1 and #2, Monitoring Question # 7, Indicators #1and #2, Monitoring Question # 8, Indicators #1 and #2. Water quality data used for this assessment are 303(d) listed water bodies from Utah Division of Water Quality 2018-2020 303(d) list* and the 2020 State of Wyoming Integrated 305 (b) and 303(d) reports*.*

Indicator #1 Aquatic habitat conditions.

Monitoring results: *For fish abundance and condition surveys see Monitoring Question # 8, Indicator #2. Water quality may indicate natural and/ or man-caused conditions that affect aquatic habitat. Several streams that are classified as not supporting its beneficial use and is presented in the table below. The Utah 2022 Integrated Report identifies all streams and lakes that are listed as not supporting are rated as low priority for assessment. In the 2022 303(d) list, four analysis units had parameters delisted from the previous assessment. In Wyoming, Willow Creek on EMRD was considered impaired for habitat alteration and is now fully supporting its beneficial uses. Based on the current assessment, all streams on the WCNF in Wyoming are meeting their beneficial uses for the streams that have been assessed.*

Table 1. 303(d) listed water bodies from Utah Division of Water Quality 2022 303(d) list and 2020 State of Wyoming Integrated 305 (b) and 303(d) reports.			
Ranger District	Analysis Unit ID	Analysis Unit Description	Parameter
Salt Lake RD	UT16020102-023_00	Hardscrabble Creek	Max. Temperature (3A)
	UT16020102-026_00	East Canyon Creek-2	Max. Temperature (3A); Total Diss.[1] Solids (4)
	UT16020102-027_00	Kimball Creek	Arsenic (1C, HH1C)
	UT16020102-032_01	South Fork Kays Creek	Copper, Diss. (3A)
	UT16020102-032_02	Middle Fork Kays Creek	Copper, Diss. (3A)
	UT16020102-034_00	Holmes Creek-2 (No evidence of Impairment)	Copper, Diss.
	UT16020102-038_00	Farmington Creek-2	Aluminum, Diss. (3A); Copper, Diss. (3A)
	UT16020102-043_00	Barnard Creek	E. coli. (2B), Copper, Diss. (3A)
	UT16020102-044_02	Centerville Creek	Copper, Diss. (3A)
	UT16020102-045_00	Stone Creek-2 (Insufficient Data)	Copper, Diss.
	UT16020102-049_00	Mill Creek2-Davis	Copper, Diss.
	UT16020204-010_00	City Creek-2	Cadmium, Diss. (3A)
	UT16020204-013_00	Parleys Canyon Creek-2	Cadmium, Diss.
	UT16020204-020_00	Big Cottonwood Creek-2	Cadmium, Diss. (3A); Copper, Diss. (3A)
	UT16020204-022_00	Little Cottonwood Creek-2	Cadmium, Diss. (3A); Copper, Diss. (3A), pH (1C, 2B, 3A)
	UT16020204-025_00	Parleys Canyon Creek-1	E. coli (1C, 2B), macroinvertebrate (3A)
Kamas RD	UT16020101-030_00	Beaver Creek2-Kamas	Aluminum, Diss. (3A)
	UT16020203-006_02	Provo River-6-2	Aluminum, Diss. (3A); Zinc, Diss. (3A)
	UT16020203-006_03	Provo River-6-3	Aluminum, Diss. (3A); pH (1C, 2B, 3A, 4), Copper (3A)
	UT-L-14060003-293_	*Butterfly Lake along Mirror Lake Highway*	pH, Dissolved Oxygen
	UT-L-16020203-002	*Trial Lake*	pH
	UT14040107-001_00	Blacks Fork	Aluminum, Diss. (3A)
	UT14040107-005_00	East Fork Smiths Fork	Aluminum, Diss. (3A); Zinc, Diss. (3A)
	UT16010101-021_00	Bear River -6	Aluminum, Diss.
	UT16010101-025_00	Stillwater Fork	pH (2B, 3A, 4)
	UT-L-14040107-004	*Bridger Lake*	pH, Dissolved Oxygen
	UT-L-14040107-005	*Lyman Lake*	Dissolved Oxygen
	UT-L-14040107-006	*China Lake*	Temperature, Dissolved Oxygen
	WYGR140401070205_01	Willow Creek (Delisted)	Habitat Alteration
Ogden RD	UT16010101-007_00	Big Creek	E. coli (2B); pH (3A)
	UT16020102-001_00	Weber River-1	Macroinvertebrates (3A)
	UT16020102-002_00	Weber River-3	OE Bioassessment

	UT16020102-009_00	Middle Fork Ogden River	Min. Diss. Oxygen (3A)
	UT-L-16020102-014	*Pineview Reservoir (Has a TMDL)*	pH, Total Phosphorus, Temperature, Dissolved Oxygen
Logan RD	UT16010201-001_00	Bear Lake West	Macroinvertebrates (3A)
	UT16010201-002_00	Laketown	Max Temperature (3A), Macroinvertebrates (3A)
	UT16010203-005_00	Logan River-1	E. coli (3A), Total Phosphorus as P (3A)
	UT16010203-006_00	Logan River-2	pH (2B, 3A, 4)
	UT16010203-008_00	Spring Creek	Max Temp (3A), Total Diss. Solids (4)
	UT16010203-020_00	Blacksmiths Fork-1	E. coli. (2B)

[1] Diss. means dissolved

Note that Colors mean:

Blue - Delisted

Light Blue – No Evidence of Impairment

Pink – Insufficient Data

Black – Not Supporting, Carry over from previous assessment

Red – Not Supporting, New listing

Table 2. Utah Division of Water Quality 2022 303(d) listed water bodies that were delisted in the 2022 Integrated Report.			
Ranger District	Analysis Unit ID	Analysis Unit Description	Parameter
Kamas RD	UT16020203-006_01	Provo River-6-1	Zinc, Diss. (3A) (In 2022 assessment, Dissolved Zinc was delisted because it meets WQ criteria with new data)
	UT16020203-006_03	Provo River-6-3	Zinc, Diss. (3A), (In 2022 assessment, Dissolved Zinc was delisted because it meets WQ criteria with new data),
Evanston-Mt. View RD	UT14040106-003_00	West Fork Beaver Creek	Aluminum, Diss. (3A) (In 2022 assessment, Dissolved Aluminum was delisted because it meets WQ criteria with new data)
	UT14040106-004_00	Middle Fork Beaver Creek	Aluminum, Diss. (3A) (In 2022 assessment, Dissolved Aluminum was delisted because it meets WQ criteria with new data)

Indicator #2 Riparian ecosystem conditions.

Monitoring results: *There was a natural debris flow in Cardiff Fork in Big Cottonwood Canyon that reached the valley bottom and caused a few days of high turbidity in Big Cottonwood Creek and impacted the water treatment plant at the mouth of the canyon. There was a natural debris flow in Little Cottonwood Canyon that covered the road for a day and Utah Department of Transportation removed the material and installed larger culverts across the road. Overall, very little change has occurred to riparian areas of the Wasatch-Cache Planning Area and most management activities have avoided impacts to these areas.*

Indicator #3 Forested Terrestrial ecosystem conditions.
Monitoring results: *In 2020, the Upper Provo fire burned on the WCNF for a total of 336 acres. In 2021, the Parleys Fire burned a total of 131 acres on the WCNF. Areas within a fire having high soil burned severity is an indication of changes to the soil that can result in reduced soil productivity. An assessment of soil burn conditions on the Upper Provo Fire indicate that 0 acres had high soil burn severity and the Parleys Fire had 1 acre of high burn severity in conifer. Very few impacts to soils occurred on the WCNF from wildfire in 2020-2021.*

Indicator #4 Non-forested terrestrial ecosystem conditions. *See Monitoring Question #7, Indicator #2*

<u>Monitoring Question #12</u> Are Forest management activities and natural events affecting watershed conditions?

Finding: *No changes are needed. The UWCNF is working cooperatively to collect water samples and to provide information to the Utah Division of Water Quality on possible causes of water quality impairment. No lichen monitoring has occurred in 2016-2017. The next evaluation is scheduled in 2026 when another round of lichen monitoring should be complete. Past lichen monitoring indicates no change is needed. Based on projects monitored in 2020-2021, monitoring indicates that a small amount of impairment of soil properties have occurred from a dispersed site activity, the remaining sites have no permanent or substantial impairment of soil resources and there has been no loss of soil productivity. The Forest Plan allows for the rehabilitation of dispersed sites that have impairment of soil properties.*

Indicator #1 Aquatic Habitat conditions.
Data source: *See Monitoring Question #8, Indicator #2 and Monitoring Question #11, Indicator #1.*
Monitoring results: *See Monitoring Question #8, Indicator #2 and Monitoring Question #11, Indicator #1.*

Indicator #2 Air Quality - Trends of lichen biomonitoring sites.
Data source: *The WCNF has seven lichen monitoring sites. Four sites are established in the High Uintas Wilderness Area, one site in the Lone Peak Wilderness Area, and two in the Deseret Peak Wilderness Area. A report on lichen surveys was completed in 2013 by Brigham Young University. The results of the evaluation were presented in the 2016-2017 Forest Plan Monitoring Evaluation report. The monitoring interval for lichen monitoring is 10 years and no new data has been collected for 2020-2021 Forest Plan Monitoring Evaluation report.*
Monitoring results: *No data is available for evaluation for the 2020-2021 Forest Plan Monitoring Evaluation report.*

Indicator #3 Changes in soil properties (physical, chemical, and biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource.
Data source: *Soil resource condition surveys*
Monitoring results: *In 2020 and 2021, three projects were monitored and documented in the National Best Management Practices database that included implementation and effectiveness for the projects. Monitored activities are listed below.*

1. *Lewis M. Turner Guard Station Pasture (Monitored 05/19/2021): Pasture is used to graze horses during the summer season. Pasture is well vegetated with no sign of erosion or deposition. O rilssare seen and the access to water is along 25' aof stream bank on one side. A buck and pole fence lines Tony Grove Creek that has has water that is clear with thick willows along the edge.*
2. *Tony Grove Road chip and seal and spur road to gravel pit reconstruction and water drainage improvements (Monitored 06/23/2021): Along Tony Grove road, topsoil from reconstructing embankment was reserved in a gravel pit for future use. On a spur road, rolling dips and outlet structures with rock armoring to dissipate energy of water flow from road were constructed and are effective to reduce erosion.*
3. *Beaver Creek Horse Pasture (Kamas RD, Monitored 07/28/2021): A 20' wide fenced corridor across Beaver Creek provides access to pasture on north side of stream. Although three 2'-wide bare soil paths were seen leading to stream, impacts from horse access is very limited because any sediment movement to Beaver Creek is confined to this narrow area. Thick, tall willow stand is along riparian area and really restricts access by horses to Beaver Creek.*

Results of monitoring indicates that these activities had BMPs mostly or fully implemented and that the BMPs were effective at reducing sediment movement. There was no permanent or substantial impairment of soil properties due to these project activities and no loss of soil productivity.

<u>Monitoring Question #13</u> NFMA compliance: Are we complying with appropriate NFMA requirements?
Finding: *No changes are needed.*

Indicator #1 Stocking of lands.
Data source: *Uinta-Wasatch-Cache NF Annual Reforestation and Timber Stand Improvement Needs Report*
Monitoring results: *The Wasatch-Cache National Forest did not have any planting activities in 2021. The forest does not show any acreage needed to plant or to certify as being restocked. From Peter Howard 12/21/2021)*

<u>Monitoring Question #14</u> Are timber management activities impairing soil productivity of the land?

Finding: *No changes are needed.*

Indicator #1 Changes in soil properties (physical, chemical, and/or biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource. Specific indicators are amount of soil disturbance, change inorganic matter, or change in Soil structure, soil temperature, A horizon depth.
Data source: *Soil resource condition surveys conducted on timber harvest units.*
Monitoring results *In 2020 and 2021, four projects were monitored to determine soil conditions following timber vegetation treatments. Monitored activities are listed below.*

1. ***Burnt Fork conifer thinning treatments*** *(Monitored 06/29/2020): Thinning used chain saws, no heavy equipment was used, and no soil erosion was seen. Water was clear in Birch Creek and water was running off road but not directly reaching Birch Creek.*
2. ***Two Blacks Fork Salvage Clearcut Harvest Units****, harvested between 2014 and 2017 (Monitored 07/08/2020 and 08/12/2020): Used soil monitoring protocol USDA 2009. Forest Soil Disturbance Monitoring Protocol, Volume 1: Rapid Assessment, By Deborah S Page-Dumroese, Ann Abbott, and Thomas M. Rice. Gen. Tech. Report WO-82a, September 2009. Disturbance classes are Class 0 (Undisturbed), Class 1 (some slight indications of soil disturbance), Class 2 (moderate soil disturbance), and Class 3 (high level of soil disturbance). The first harvest unit observations were topsoil displacement, rutting, burning, and compaction, but no observations of soil structure (platy structure/ massive/ puddled). Transect had 101 points taken within the timber harvest unit in a zig-zag manner and results are Class 0 = 95%, Class 1 = 0%, Class 2 = 4% and Class 3 = 1%. The second harvest unit observations were topsoil displacement, erosion, rutting, burning, and puddling, but no observations of soil structure (platy structure/ massive/ puddled). Transect had 56 points taken within the timber harvest unit in a zig-zag manner and results are Class 0 (Undisturbed) = 90%, Class 1 = 4%, Class 2 = 0% and Class 3 = 6%.*
3. ***West Fork Blacks Fork Clearcut Harvest Units*** *– Several harvest units from 5 to 20 years old (Monitored 08/26/2020): Main haul road has lodgepole pine seedlings about 5 years old. No sign of accelerated erosion or sediment movement on roads. Ground cover under 20-year old lodgepole pine has 1" duff composed of pine needles. With forbs and currant bushes. Dense lodgepole pine is seen on skid trail with trees 20 years old. Good ground cover density is seen in harvest units and unharvested area burned in 2002 East Fork Fire. Temporary roads have filled in with native vegetation of surrounding area and no weeds are seen. No accelerated erosion or sediment movement is seen.*
4. ***Humpy Creek Timber Harvest Units –*** *In 2016, timber harvested was completed in this area and harvest units had branches left on the ground, skid trails ripped, temporary roads and landing areas decommissioned. Currently, these areas are well-vegetated with very little use seen on the roads by unauthorized vehicles.*

<u>Monitoring Question #15</u> Are goods and services being provided in accordance with Forest Plan goals and objectives?

Finding: *No changes are needed. The Wasatch-Cache NF is providing a variety of goods and services according to the Forest Plan.*

Indicator #1 Number of Lands Special Use Permits.
Data source: *Forest Service Special Uses Data System (SUDS) database.*
Monitoring results: *The number of lands and recreation special use permits are presented by ranger district in the table below. Lands SUPs are uses such as dams, water transmission lines, geophysical exploration. Recreation SUPs are uses such as recreation residences, outfitter and guides, and recreation events. Since 2019, total number of Lands SUPs decreased by 26 and Recreation SUPs increased by 47.*

Number of Lands Special Use Permits.									
Ranger District	***Number of Lands SUP***			***Number of Recreation SUP***			***Total***		
	2017	***2019***	***2021***	***2017***	***2019***	***2021***	***2017***	***2019***	***2021***

Supervisor's Office[1]	*46*	*49*	*44*	*14*	*12*	*12*	*60*	*61*	*56*
Salt Lake	*158*	*185*	*159*	*176*	*162*	*178*	*334*	*347*	*337*
Heber/Kamas[1]	*32*	*55*	*55*	*48*	*95*	*113*	*80*	*150*	*168*
Evanston- Mt. View	*43*	*44*	*44*	*49*	*48*	*50*	*92*	*92*	*94*
Ogden	*43*	*44*	*48*	*13*	*9*	*18*	*56*	*53*	*66*
Logan	*53*	*61*	*62*	*99*	*92*	*94*	*152*	*153*	*156*
Total	*375*	*438*	*412*	*399*	*418*	*465*	*774*	*856*	*877*

[1]*Note that Supervisor's Office is for both the Uinta NF and the Wasatch-Cache NF because they are managed as a combined Forest unit. Kamas/Heber RDs data is the total for both ranger districts and is not broken out by separate planning areas.*

Indicator #2 Number of Recreation Special Use Permits. *See indicator #1 and table above.*

Indicator #3 Acres leased for oil and gas exploration and development.
Data source: *US Bureau of Land Management LR2000 database.*
Monitoring results: *As of 11/10/2021, there are 25 authorized oil and gas leases containing 52,588 acres within the Uinta-Wasatch-Cache NF plan area. There has been no change from the 2018-2019 WCNF Forest Plan Monitoring Report.*

Indicator #4 Level of permitted livestock grazing.
Data source: Range Allotment Annual Operating Plans
Monitoring results: *The level of permitted livestock grazing has not changed since 2015. The table below presents the permitted commercial livestock use levels. The term AUM means animal unit months.*

Level of permitted livestock grazing.							
Ranger District	***Number of permittees***	***Cattle Numbers***	***Cattle AUM***	***Sheep & Goats Numbers***	***Sheep & Goats AUM***	***Total number***	***Total AUM***
Salt Lake	*17*	*957*	*3,025*	*0*	*0*	*957*	*3,993*
Kamas	*12*	*989*	*5,146*	*0*	*0*	*989*	*5,146*
Evanston- Mt. View	*21*	*2,364*	*9,052*	*20,262*	*12,015*	*22,626*	*21,067*
Ogden	*17*	*2,549*	*4,549*	*9,915*	*6,242*	*12,464*	*10,791*
Logan	*31*	*5,132*	*23,760*	*11,029*	*9,826*	*16,181*	*33,586*

Total	*98*	*11,991*	*45,532*	*41,206*	*28,083*	*53,217*	*74,583*

Indicator #5 Other Forest Products (Fuelwood and Christmas Tree Permits).
Data source: *Forest Service PTSAR database.*
Monitoring results: *The Wasatch-Cache National Forest sold 4,756 special forest product permits to individuals in 2021. Among these permits were Christmas trees, firewood, and posts and poles. (From Peter Howard 12/21/2021)*

Indicator #6 Total Timber Sale Program Quantity.
Data source: *Forest Service PTSAR database.*
Monitoring results: *In 2020-2021,* the amount of commercial timber and personal use permits volume sold is 21,890 CCF. *The Forest plan indicates that the forest should average 9,000 CCF of timber sold per year. The forest is exceeding this annual average to salvage beetle killed timber while there is some economic viability to it.*

<u>Monitoring Question #16</u> National Historic Preservation Act as amended: Are cultural resources being protected as the Forest Plan is implemented and are mitigation measures sufficient prevent damage to cultural resources from project activities? Are *Historic Properties* receiving adverse effects from project implementation, vandalism, looting, and/or neglect?

Finding: *No changes are needed.*

Indicator #1 Number of *Historic Properties* that received new adverse effects from looting, vandalism, and/or neglect.
Data source: *Heritage data module, hard copy reporting.*
Monitoring results: *The Logan Ranger District has 2 adverse effects. (1)- unauthorized excavation in and around the old USU Forestry Camp due to the new owner excavating trenches to install pipes and conduit. (2) Rock Climbing route bolted above indigenous rock imagery panel. Removal of route is recommended. There is no need to change management or change the Forest Plan because the Forest has the ability to take action to reduce these activities such as installing education signs and exclosures. The Forest is also using Utah State Archaeological Site Stewardship Volunteers to monitor sites across the Forest.*