



United States Department of Agriculture

Grand Targhee Master Development Plan Projects Draft Environmental Impact Statement



**Prepared for:
US Department of Agriculture – Forest Service
Caribou-Targhee National Forest**

**By:
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Caribou-Targhee National Forest

Teton Basin Ranger District

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Abstract

Draft Environmental Impact Statement for the Grand Targhee Master Development Plan Projects

Caribou-Targhee National Forest

Teton County, WY

March 2025

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Abstract: This Draft Environmental Impact Statement (DEIS) has been prepared to analyze and disclose the estimated environmental effects of projects proposed in and adjacent to the existing Grand Targhee Resort (GTR) Special Use Permit (SUP) area on National Forest System (NFS) lands within the Caribou-Targhee National Forest (CTNF). Five alternatives are analyzed in detail in this Draft EIS: Alternative 1 (No Action Alternative), Alternative 2 (Proposed Action), Alternative 3 – No SUP Expansion, Alternative 4 – South Bowl, No Mono Trees, and Alternative 5 – Mono Trees, No South Bowl. Alternative 2 includes the following elements: development of a 266-acre SUP boundary expansion in South Bowl; development of a 600-acre SUP boundary expansion in Mono Trees; development of 157 acres of traditional terrain, including 60 acres within the South Bowl SUP and 97 acres within the Mono Trees SUP; construction of both the South Bowl lift and Mono Trees lift to provide lift access to terrain in the proposed SUP areas; a guest facility at the top and bottom terminal of the proposed South Bowl lift and a new Lightning Ridge guest facility at the top terminal of the proposed Mono Trees lift; various construction, access, and maintenance roads within the proposed SUP areas; implementation of two avalaunchers in the South Bowl SUP area; replacement of two lifts within the existing SUP; construction of four new lifts within the existing SUP; development of 214 acres of traditional terrain, including 550 acres of gladed terrain within the existing SUP; implementation of a Mountain Road Rehabilitation Program within the existing SUP; implementation of 57 acres of snowmaking within the existing SUP; construction of a snowmobile rescue catch within the existing SUP; construction of five new guest service facilities within the existing SUP; construction of a snow tubing facility within the existing SUP; construction of Nordic, snowshoe,

and fat biking trails within the existing SUP; construction of 29 miles of mountain bike trails within the existing SUP; and implementation of various summer activities within the summer activity zone, which could include a canopy tour, aerial adventure course, or zip line course. Alternative 3 includes only the expansions within the existing SUP area, Alternative 4 includes the expansions within the existing SUP area including within the South Bowl proposed SUP, and Alternative 5 includes the expansions within the existing SUP including the Mono Trees proposed SUP. Components of all five alternatives are included in **Chapter 2**.

The DEIS discusses the purpose and need for the project; alternatives considered in detail as well as alternatives dismissed from detailed analysis; potential direct, indirect, and cumulative impacts of each alternative; and best management practices and project design criteria.

Executive Summary

The proposed projects analyzed in this document constitute a federal action, which has the potential to affect the quality of the human environment on public lands administered by the United States Forest Service (Forest Service). Therefore, this project must be analyzed pursuant to the National Environmental Policy Act of 1969 (NEPA). Under NEPA, federal agencies must carefully consider environmental concerns in their decision-making processes and provide relevant information to the public for review and comment.

The Forest Service has prepared this DEIS in compliance with NEPA and other relevant federal and state laws and regulations. This Draft EIS contains analyses consistent with NEPA and Forest Service policy. It discloses potential direct, indirect, and cumulative environmental effects on the human and biological environment anticipated to result with implementation of each alternative. This Draft EIS also contains Forest Plan amendments that are subject to 36 CFR §219 as further explained in **Appendix C. Forest Plan Amendments**. Additionally, it is intended to ensure that planning considers the environmental and social values of the study area and that potential resource conflicts are minimized or avoided.

Purpose and Need for Action

The Forest Service is responding to an application submitted under the National Forest Ski Area Permit Act of 1986 and Ski Area Recreational Opportunity Enhancement Act of 2011 (SAROE) by GTR to implement projects from their accepted *2018 Grand Targhee Resort Master Development Plan* (2018 GTR MDP).

The purpose of, and need for, the Forest Service's action is to decide whether to grant a special use permit (SUP) for the project. The Caribou-Targhee National Forest (CTNF) will consider the application for use of NFS lands and determine if the project is in the public interest and is appropriate, based on the 1997 Revised Forest Plan for the Targhee National Forest (1997 Forest Plan).

Proponent Objectives

In the 2018 GTR MDP, GTR identified a need to improve the recreational experience and address shortcomings in their terrain offerings and operations in order to remain viable in the competitive destination skier/rider market. Specifically, GTR has identified a need to:

- Provide additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails to enhance terrain variety and skiing experiences at GTR.
- Enhance the skiing experience for various ability levels of guests, by providing an appropriate learning progression in an uncongested beginner area and increasing the quantity of beginner, intermediate, and advanced-intermediate terrain to meet current and anticipated public demand.
- Improve skier circulation across the mountain through improvements to the efficiency of the lift and trail network and by providing more reliable and consistent snow coverage in key areas.
- Improve base area, guest services, operational facilities, and on-mountain services to meet the ever-increasing expectations of the local, regional, and destination skier markets.
- Expand alternative and non-winter activities to provide a variety of recreational options to guests and to utilize existing infrastructure more effectively during non-winter months.

- Ensure that risks to public safety associated with resort operations are managed to an extent that is reasonable and appropriate.

Summary of the Alternatives Analyzed in this Environmental Impact Statement

In addition to Alternative 2 – Proposed Action and Alternative 1 – No Action, Alternative 3 – No SUP Expansion; Alternative 4 – South Bowl, No Mono Trees; and Alternative 5 – Mono Trees, No South Bowl are also analyzed in detail within the DEIS. Refer to **Chapter 2** for a full description of each alternative. A table comparing each of these alternatives is available in **Appendix D**.

Alternative 1 – No Action Alternative

The No Action Alternative provides a baseline for comparing the effects of the action alternatives. The No Action Alternative essentially reflects a continuation of existing management practices without changes, additions, or upgrades to existing conditions as a result of this NEPA analysis. Under the No Action Alternative, none of the projects as described under Alternative 2 – Proposed Action would be implemented. Existing conditions can be seen in **Figure 2**.

Alternative 2 – Proposed Action

These projects include an expansion of the existing GTR SUP boundary, several lift replacements, realignments, and additions, terrain improvements, and the addition of guest services facilities to improve the guest experience. All components of Alternative 2 are depicted in **Figure 3**, **Figure 4**, and **Figure 5**. In short, an 866-acre SUP would be authorized on NFS lands. The SUP area would be divided into two noncontiguous areas: a 266-acre expansion into the South Bowl area, southwest to the existing SUP area, and a 600-acre expansion into the Mono Trees area, southeast to the existing SUP area. Ski terrain in the form of cleared slopes and lift infrastructure. Alternative 2 includes the following elements:

- 266-acre expansion of the SUP into South Bowl;
- 600-acre expansion of the SUP into Mono Trees;
- Development of 60 acres of traditional terrain in the South Bowl SUP;
- Development of 97 acres of traditional terrain in the Mono Trees SUP;
- Construction of both the South Bowl and Mono Trees Lifts;
- Construction of a guest facility at the top and bottom terminal of the South Bowl Lift;
- Construction of a guest facility at Lightning Ridge in the top terminal of the Mono Trees Lift;
- Implementation of two avalaunchers in the South Bowl SUP area;
- Construction of various construction, access, and maintenance roads within the proposed SUP areas; and
- Various projects within the existing SUP including replacing two lifts; constructing four new lifts; developing 214 acres of traditional terrain; developing 550 acres of gladed terrain; implementation of 57 acres of snowmaking; implementation of a Mountain Road Rehabilitation Program; installation of a snowmobile rescue catch; construction of five new guest service facilities; construction of a snow tubing facility; construction of Nordic, snowshoes, and fat biking trails;

construction of 29 miles of mountain bike trails; and implementation of a various summer activities in the summer activity zone.

Alternative 3 – No SUP Expansion

Alternative 3 was developed in response to a variety of resource concerns by the CTNF interdisciplinary team and the public, associated with the SUP expansion into South Bowl and Mono Trees including wildlife, recreation, socioeconomics, and scenery. Specifically, Alternative 3 excludes any proposed expansion of the SUP, and only includes projects within the existing SUP area. All components of Alternative 3 are depicted in **Figure 2**. Project components included in Alternative 3 include:

- Constructing the new Crazy Horse and North Boundary Lifts; upgrading the Dreamcatcher and Shoshone Lifts, and constructing the new Palmer Platter Surface Lift and Lights along with the new teaching carpet;
- Implementing 107 acres of new traditional terrain, 107 acres of terrain improvements, 204 acres of proposed glades, and 45 acres of groomable glades;
- Implementing the Mountain Roads Rehabilitation Program, including eliminating steep and no longer necessary on-mountain access roads, and constructing new roads to bypass steep grades and improve mountain circulation and maintenance;
- Installation of 57 acres of snowmaking to improve lower-mountain circulation routes;
- Construction of full-service on-mountain guest services facilities at the summit of Fred's Mountain and at the top terminal of the Sacajawea Lift, a facility at the top of the Shoshone Lift, two on-mountain guest facilities in Rick's Basin and at the top of Lightning Ridge, and two storage and vault toilet facilities at the base of the North Boundary and Blackfoot Lifts;
- Constructing 29 miles of downhill biking, hiking and multi-use trails;
- Constructing a canopy tour/fly line, zip line, aerial adventure course, and disc golf course in the summer activity zone near the Shoshone Lift; and
- Constructing snow tubing facilities, and expansion and improvement of Nordic, snowshoeing and fat biking offerings.

Alternative 4 – South Bowl, No Mono Trees

Alternative 4 was developed in response to resource concerns by the CTNF interdisciplinary team and the public, including scenery, socioeconomics, public safety, and wildlife. Alternative 4 includes all projects proposed within the existing SUP, along with all projects proposed in the South Bowl SUP expansion. This would result in a 266-acre SUP expansion into South Bowl. Project elements proposed under Alternative 4 include:

- 266-acre expansion of the SUP into South Bowl;
- Development of 60 acres of traditional terrain in the South Bowl SUP;
- Construction of the South Bowl Lift;
- Construction of a guest facility at the top and bottom terminal of the South Bowl Lift;
- Implementation of two avalaunchers in the South Bowl SUP area;

- Construction of various construction, access, and maintenance roads within the proposed SUP areas; and
- Various projects within the existing SUP including replacing two lifts; constructing four new lifts; developing 214 acres of traditional terrain; developing 550 acres of gladed terrain; implementation of 57 acres of snowmaking; implementation of a Mountain Road Rehabilitation Program; installation of a snowmobile rescue catch; construction of five new guest service facilities; construction of a snow tubing facility; construction of Nordic, snowshoes, and fat biking trails; construction of 29 miles of mountain bike trails; and implementation of a various summer activities in the summer activity zone.

Alternative 5 – Mono Trees, No South Bowl

Alternative 5 was developed in response to resource concerns by the CTNF interdisciplinary team as well as by the public through the scoping process. Resource concerns that were taken into account during the development of Alternative 5 include wildlife, recreation, socioeconomics, and scenery. Alternative 5 only includes the proposed Mono Trees SUP expansion. This would be a 600-acre SUP expansion.

Specifically, the project elements included in Alternative are:

- 600-acre expansion of the SUP into Mono Trees;
- Development of 97 acres of traditional terrain in the Mono Trees SUP;
- Construction of the Mono Trees Lift;
- Construction of a guest facility at Lightning Ridge in the top terminal of the Mono Trees Lift;
- Construction of various construction, access, and maintenance roads within the proposed SUP areas; and
- Various projects within the existing SUP including replacing two lifts; constructing four new lifts; developing 214 acres of traditional terrain; developing 550 acres of gladed terrain; implementation of 57 acres of snowmaking; implementation of a Mountain Road Rehabilitation Program; installation of a snowmobile rescue catch; construction of five new guest service facilities; construction of a snow tubing facility; construction of Nordic, snowshoes, and fat biking trails; construction of 29 miles of mountain bike trails; and implementation of a various summer activities in the summer activity zone.

Public Involvement

An initial 30-day scoping period began on August 26, 2020, when the Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) was published in the Federal Register. The scoping period was subsequently extended to 45 days to account for difficulties associated with the COVID-19 pandemic and the large volume of project materials. A scoping package, including a scoping notice identifying the Proposed Action and the corresponding Purpose and Need, was also prepared, approved, and sent to a list of individuals, organizations, and agencies. A legal notice was also published in the CTNF newspaper of record, the Idaho Falls Post Register. During the 45-day scoping period, there was targeted outreach to specific stakeholders to gather input and answer questions on the project. Two web-based public scoping meetings were held via Microsoft Live Events on September 8 and September 10, 2020, to further inform the public of the projects identified in the scoping notice (virtual public scoping meetings were conducted rather than in-person meetings due to the COVID-19 pandemic). In addition, the public had ample access

to project details through an interactive ArcGIS Story Map and project specific website that was created in addition to the CTNF's project website (<https://www.fs.usda.gov/project/?project=58258>).

Scoping comments were accepted through mail, fax, telephone, email, and through the CTNF's project website (<https://www.fs.usda.gov/project/?project=58258>). In total, 387 comment letters were received. From these comments, 1,338 substantive comments were extracted and categorized into the major themes expressed by commenters. These themes were reviewed in subsequent ID Team meetings (on November 23 and December 11, 2020) and were used to inform additional alternatives to the Proposed Action. These alternatives as well as alternatives considered by dismissed from detailed analysis, are detailed in **Chapter 2**. The resource issues are discussed further in **Chapter 3**.

Summary Comparison of Direct and Indirect Environmental Consequences

Table 2.6-1 in **Chapter 2** includes a summary of resource issues, indicators associated with those issues, and a comparison of environmental consequences for the No Action Alternative, Alternative 2, Alternative 3, Alternative 4, and Alternative 5. Detailed information on affected environment and environmental consequences considered in this analysis can be found in **Chapter 3**.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic	JSW	Jedediah Smith Wilderness
ACHP	Advisory Council on Historic Preservation	LAU	Lynx Analysis Unit
AIZ	Aquatic Influence Zone	LAUs	Lynx Analysis Units
AOT	At-One-Time	LCAS	Lynx Conservation Assessment and Strategy
APE	Area of Potential Effect	LHTAC	Local Highway Technical Assistance Council
AQD	Air Quality Division	LOS	Level of Service
AQI	Air Quality Index	MDP	Master Development Plan
AVO	Average Vehicle Occupancy	MOU	Memorandum of Understanding
BAU	Bear Analysis Unit	NAAQS	National Ambient Air Quality Standards
BCR 10	Northern Rockies Bird Conservation Region	NAGPRA	The Native American Grave Protection and Repatriation Act
BEIG	Built Environment Image Guide		
BMP	Best Management Practices	NEI	National Emissions Inventory
BYU-I	Brigham Young University-Idaho	NEPA	National Environmental Policy Act
CAA	Clean Air Act	NFMA	National Forest Management Act
CCC	Comfortable Carrying Capacity	NFS	National Forest System
CCVA	Climate Change Vulnerability Assessment	NHPA	National Historic Preservation Act
CFR	Code of Federal Regulations	NHRHP	National Register of Historic Places
COOP	Cooperative Observer Program	NPS	National Park Service
CTNF	Caribou-Targhee National Forest	NRLMD	Northern Rockies Lynx Management Direction
CWA	Clean Water Act	NWPS	National Wilderness Preservation System
DBH	Diameter at breast height	NWPs	Specific Nationwide Permits
DEIS	Draft Environmental Impact Statement	PA	Programmatic Agreement
DEQ	Department of Environmental Quality	PDC	Project Design Criteria
DMP	Drain Management Plan	PIF	Partners in Flight
EAOT	Employees At One Time	POW	Protect our Winters
EDRR	Early Detection and Rapid Response	PUD-PR	Planned Unit Development for Planned Resort
EIA	Energy Information Administration	PWS	Public Water System
EIS	Environmental Impact Statement	RCP	Representative Concentration Pathways
EO	Element Occurrence	ROD	Record of Decision
ESA	Endangered Species Act	ROS	Recreation Opportunity Spectrum
FRREC	Fall River Rural Electric Cooperative	SAROEa	Ski Area Permit Act of 1986 and Ski Area Recreational Opportunity Enhancement Act of 2011
FSH	Forest Service Handbooks	SH	State Highway
FSM	Forest Service Manual	SHPO	State Historic Preservation Officer
FTE	Full-time Employees	SHRED	Ski Hill Resources for Economic Development
GTNP	Grand Teton National Park	SNOTEL	Snow Telemetry
GTR	Grand Targhee Resort	SOLC	Species of Local Concern
GYA	Greater Yellowstone Area	SRT	Snow Rain Transition
GYE	Greater Yellowstone Ecosystem	SUP	Special Use Permit
HD	Hydrologic Disturbance	SWE	Snow Water Equivalent
HUC	Hydrologic Unit Code	TCSAR	Teton County Search and Rescue
IAP	Intermountain Adaptation Partnership	TCISAR	Teton County Idaho Search and Rescue

TEP	Threatened or Endangered Species
TNF	Targhee National Forest
TPA	Trees per acre
TPW	Targhee Principal Watershed
TRB	Transportation Research Board
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UTVs	Utility Task Vehicles
VMS	Visual Management System
VQO	Visual Quality Objectives
WBP	Whitebark Pine
WAQSR	Wyoming Air Quality Standards and Regulations
WSP	wilderness stewardship performance
WY-22	Wyoming State Highway 22
WYNDD	Wyoming Natural Diversity Database
YNP	Yellowstone National Park

Chapter 1. Purpose and Need

1.1 Introduction

The proposed improvements analyzed in this document constitute a federal action, which has the potential to affect the quality of the human environment on public lands administered by the United States Forest Service (Forest Service). Therefore, these projects must be analyzed pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended. Under NEPA, federal agencies must carefully consider environmental concerns in their decision-making processes and provide relevant information to the public for review and comment.

The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) in compliance with NEPA and other relevant federal and state laws and regulations. This DEIS contains analyses consistent with NEPA, and Forest Service policy. It discloses potential direct, indirect, and cumulative environmental effects on the human and biological environment anticipated to result with implementation of the Proposed Action or another action alternative. Additionally, it is intended to ensure that planning considers the environmental and social values of the study area and that potential resource conflicts are minimized or avoided. The document is organized into eight chapters, plus three appendices:

- **Chapter 1 – Introduction:** includes information on the history of the project proposal, the purpose of and need for the project, and the proposal for achieving that Purpose and Need. **Chapter 1** details how the Forest Service informed the public of the proposal and how the public responded. **Chapter 1** also describes issues raised through the scoping process.
- **Chapter 2 – Description of Alternatives:** provides a detailed description of the No Action Alternative (Alternative 1), the Proposed Action (Alternative 2), and Alternatives 3, 4, and 5 that are analyzed in detail in this document. This discussion also includes alternatives considered but eliminated from further analysis and project design criteria (PDC). Finally, **Chapter 2** provides a summary table (**Table 2.6-1**) of the environmental consequences anticipated with each alternative.
- **Chapter 3 – Affected Environment and Environmental Consequences:** provides a description of the affected environment (i.e., existing conditions) by resource area, and describes the environmental effects of implementing the No Action Alternative, Proposed Action, and Alternatives 3, 4, and 5. **Chapter 3** is organized by resource topic.
- **Chapter 4 – Consultation and Coordination:** provides a list of preparers and agencies consulted during the development of this DEIS.
- **Chapter 5 – References:** provides complete references for documents cited within this DEIS.
- **Chapter 6 – Figures:** provides the maps, figures, and perspectives used throughout the analysis.
- **Chapter 7 – Glossary:** provides a definition of technical and non-technical terms used throughout this DEIS.
- **Chapter 8 – Index:** provides a list and page number of frequently used terms throughout this DEIS.
- **Appendix A – Cumulative Effects Projects:** provides a list of all projects with the potential to cumulatively affect resources in the study area.

- **Appendix B – Forest Plan Consistency Analysis:** presents standards and guidelines relevant to the Grand Targhee Master Development Plan (MDP) Projects DEIS from the 1997 Forest Plan.
- **Appendix C – Forest Plan Amendments:** provides a summary of amendments to the *1997 Forest Plan* to be consistent with *1997 Forest Plan* direction.
- **Appendix D – Summary Comparison Table:** provides a summary of Direct and Indirect Environmental Consequences

SE Group, a third-party contractor, has been contracted by GTR in alignment with 40 CFR § 6.303 to assist in the preparation of this Draft EIS. All content herein has been reviewed and approved by the Forest Service. The Forest Service holds responsibility for the information and analysis within.

Additional documentation, including more detailed analyses of study area resources, may be found in the project file located at the Teton Basin Ranger District office of the CTNF.

1.2 Background

Grand Targhee Resort (GTR) is located on the CTNF, approximately 8 miles east of Alta, Wyoming, on the west side of the Teton Mountain Range. The majority of GTR's lift and trail network is located on National Forest System (NFS) lands under a special use permit (SUP) administered by Teton Basin Ranger District of the CTNF in Teton County, Wyoming. All base area (Targhee Village) facilities, guest service facilities, portions of the beginner terrain, and a few other trails, are located on private lands owned by GTR. The 1997 Targhee Revised Forest Plan provides general standards and guidelines for the operation of GTR regarding its activities and operations on NFS lands. The ski area's SUP and associated summer and winter operating plans, as well as other resource management documents, provide more specific guidance for annual winter and summer ski area operations and projects.

According to the terms of its SUP, GTR is required to prepare a Master Development Plan (MDP) to identify management direction and opportunities for future four-season management of the resort on NFS lands. The current MDP—the *2018 Grand Targhee Resort Master Development Plan* (2018 GTR MDP)—was accepted by the Forest Service in February 2019. Forest Service acceptance of the 2018 GTR MDP does not constitute approval for individual projects. The implementation of individual projects identified in the 2018 GTR MDP is contingent upon subsequent site-specific analysis/approval in accordance with the NEPA process.

This DEIS analyzes a number of projects identified under the *Upgrade Plan* of the 2018 GTR MDP. Specifically, the Proposed Action includes expansion of the SUP boundary; development of additional skiing trails; upgrades to two existing chairlifts; installation of six new chairlifts; expansion of snowmaking; expansion of alternative winter activities, including fat bike and Nordic trails; grading adjustments; road construction and rehabilitation; development of guest services facilities; creation of a Summer Activity Zone under Shoshone lift; and additions to the existing hiking and biking trail networks. **Section 2.2** provides a full description of this project (refer to **Section 2.2.1**). Contingent upon the NEPA process, implementation of any projects, should they be approved, could potentially begin as early as 2025.

1.3 Purpose and Need for Action

The Forest Service is responding to an application submitted under the National Forest Ski Area Permit Act of 1986 and Ski Area Recreational Opportunity Enhancement Act of 2011 (SAROE) by GTR to implement projects from their accepted 2018 GTR MDP. In the 2018 GTR MDP, Grand Targhee identified a need to improve the recreational experience and address shortcomings in their terrain offerings and operations in order to remain viable in the competitive destination skier/rider market.

1.3.1 Proponent Objectives

As a primarily day-use/regional destination resort, GTR attracts people from western Wyoming, eastern Idaho, and the greater Intermountain region. It has a strong local following from residents of Victor and Driggs, Idaho and capitalizes on nearby Jackson Hole Mountain Resort's (Wyoming) destination market appeal. GTR also has a well-earned reputation and market niche within the ski industry. It is known for the intimate, low-density skiing experience that it offers, including short lift lines, diverse traditional and hike-to terrain, and outstanding views of the Tetons.

With GTR's close proximity to Yellowstone and Grand Teton National Park (GTNP), GTR is expected to see increases in visitation from both winter and summer recreational enthusiasts. Several aspects of the facilities at GTR are in need of expansion and upgrading, including but not limited to its terrain variety, lift operations, on-mountain guest facilities, and summer activities. To address industry growth, maintain its market niche, and meet increasing guest expectations, GTR must continue to develop and improve its on-mountain and base area offerings. These developments are needed in direct response to evolving consumer demands and the competitive regional and destination skier markets.

Further, there is an opportunity to increase public safety. With the installation of the Colter Lift¹, skiers are currently able to easily access the South Bowl area, which is currently outside the ski area SUP boundary. Without any additional management, South Bowl presents high avalanche risk. While it is not the ski area's responsibility to manage risk outside the SUP and skiers recreating outside the SUP assume the risk for recreating in avalanche terrain, convenient access to this terrain could plausibly result in additional incidents from use of this unmanaged area. Considering recent increases in backcountry usership, there is an opportunity for GTR to take measures to mitigate risk to guests and staff to support public safety while also providing a robust recreational experience.

The purpose of, and need for, the Forest Service's action is to decide whether to grant a special use permit (SUP) for the project. The Caribou-Targhee National Forest (CTNF) will consider the application for use of NFS lands and determine if the project is in the public interest and is appropriate, based on the 1997 Revised Forest Plan for the Targhee National Forest (1997 Forest Plan).

- In the 2018 GTR MDP, GTR identified a need to improve the recreational experience and address shortcomings in their terrain offerings and operations in order to remain viable in the competitive destination skier/rider market. Specifically, GTR has identified a need to: Provide additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails to enhance terrain variety and skiing experiences at GTR

¹USDA Forest Service 2021a

- Enhance the skiing experience for various ability levels of guests, by providing an appropriate learning progression in an uncongested beginner area and increasing the quantity of beginner, intermediate, and advanced-intermediate terrain to meet current and anticipated public demand
- Improve skier circulation across the mountain through improvements to the efficiency of the lift and trail network and by providing more reliable and consistent snow coverage in key areas
- Improve base area, guest services, operational facilities, and on-mountain services to meet the ever-increasing expectations of the local, regional, and destination skier markets
- Expand alternative and non-winter activities to provide a variety of recreational options to guests and to more effectively utilize existing infrastructure during non-winter months
- Ensure that risks to public safety associated with resort operations are managed to an extent that is reasonable and appropriate.

1.4 Proposed Action

The projects analyzed in this DEIS are designed to address the Purpose and Need described previously. This DEIS was assembled to enable the responsible official to determine whether all, portions of, or alternatives to the Proposed Action would be approved for implementation on NFS lands within and outside the existing GTR SUP area.

A summary of the Proposed Action is provided here, with a detailed description presented in **Chapter 2**.

The Proposed Action includes the addition of the following winter and multi-season recreation opportunities:

- Expansion of the SUP boundary by 866 acres to include lift-served skiing in the South Bowl and Mono Trees areas.
- Trail improvements and expansions including 107 acres of new traditional terrain, 107 acres of terrain improvements, 204 acres of proposed glades, and 45 acres of groomable glades within the existing SUP boundary and approximately 160 acres of new trails and gladed areas outside of the existing SUP boundary.
- Addition of three new lifts (Crazy Horse, North Boundary, and Palmer Platter), one new teaching carpet, and upgrades to two lifts (Shoshone and Dreamcatcher) within the existing SUP boundary and addition of two lifts (South Bowl and Mono Trees) in the proposed SUP boundary expansion areas.
- Construction of two on-mountain restaurants at the top of Sacajawea and Dreamcatcher Lifts, guest facilities at the top of the Shoshone Lift, in Rick's Basin, and on Lightning Ridge near the top terminal of the proposed Mono Trees Lift, storage and vault toilet facilities at the base of the North Boundary Lift, and improve the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility, a ski patrol facility at the top of the South Bowl Lift, and a vault toilet at the bottom of the South Bowl Lift.
- Construction of a permanent, dedicated snow tubing facility at the base of the existing Shoshone Lift.
- 57 acres of additional snowmaking coverage.
- 29 additional miles of hiking, biking, and multi-use summer recreation trails.

- Establishment of a Summer Activity Zone around the Shoshone Lift terminal to offer a hub for summer activities including a zipline, canopy tour/fly lines, an aerial adventure course, and the disc golf course.
- Construction of 4.5 miles of roads, reclamation of 2.0 miles of roads, and improvements to 7.0 miles of roads.
- Expansion of Nordic, snowshoeing, and fat biking offerings.

1.5 Public Involvement

An initial 30-day scoping period began on August 26, 2020 when the Notice of Intent (NOI) to prepare an EIS was published in the Federal Register. The scoping period was subsequently extended to 45 days to account for difficulties associated with the COVID-19 pandemic and the large volume of project materials. A scoping package, including a scoping notice identifying the Proposed Action and the corresponding Purpose and Need, was also prepared, approved, and sent to a list of individuals, organizations, and agencies. A legal notice was also published in the CTNF newspaper of record, the Idaho Falls Post Register. During the 45-day scoping period, there was targeted outreach to specific stakeholders to gather input and answer questions on the project. Two web-based public scoping meetings were held via Microsoft Live Events on September 8 and September 10, 2020 to further inform the public of the projects identified in the scoping notice (virtual public scoping meetings were conducted rather than in-person meetings due to the COVID-19 pandemic). In addition, the public had ample access to project details through an interactive ArcGIS Story Map and project specific website that was created in addition to the CTNF's project website.

Scoping comments were accepted through mail, fax, telephone, email, and through the CTNF's project website (<https://www.fs.usda.gov/project/?project=58258>). In total, 387 comment letters were received. From these comments, 1,338 substantive comments were extracted and categorized into the major themes expressed by commenters. These themes were reviewed in subsequent ID Team meetings (on November 23 and December 11, 2020) and were used to inform additional alternatives to the Proposed Action.

1.6 Relevant Changes to the Proposed Action Since Project Scoping

As stated previously, the project was originally scoped, internally and externally, in 2020. Since that time, several changes have occurred that are relevant to the planning process. These are disclosed below with a brief discussion on how the change has affected this DEIS and the analysis.

Modification to the Proposed Action: The Proposed Action described below differs from the CTNF's Proposed Action as identified in the Scoping Notice, dated August 26, 2020. Adjustments were made to the proposed projects in response to resource concerns raised internally by the CTNF and externally by the public, as well as additional planning that occurred based on new resource information obtained since the release of the scoping notice. During a holistic review of the proposal for the purpose of the DEIS analysis, it became evident that certain supporting project elements (e.g., avalanche mitigation devices, utility connections, and other upgrades) needed to be included in this proposal. Specifically, the following changes were made:

- Reduce South Bowl SUP boundary expansion from 600 to approximately 266 acres.

- Remove South Bowl East and South Bowl Connector Lifts from the proposal.
- Shorten Shoshone Lift alignment and instead install a Lift upgrade in its current alignment. As a result, reduce the number of proposed carpets in the Shoshone area and adjust snowtubing area slightly.
- Remove the guest support facility at the base of the formerly proposed South Bowl East Lift and instead install a vault toilet at the base of the South Bowl West Lift, now called the South Bowl Lift.
- Instead of the formerly proposed permanent road depicted to the bottom terminal of the formerly proposed South Bowl East Lift, build a Cat/Construction Maintenance Access Route for a more primitive road with a smaller disturbance footprint.
- Remove cat skiing from all alternatives.
- Improve the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility.
- Add ski patrol facility to the top of the proposed South Bowl Lift.
- Replace the Dreamcatcher Lift with a chondola in the same configuration that would provide the same capacity as the existing lift. Bottom and top terminals would be slightly adjusted. Chair storage would be included at the bottom terminal. The top terminal would be built to interface with proposed Fred's restaurant for better accessibility. Communication site would be improved and sited with new lift and restaurant infrastructure.

Additional scoping of these project elements was not determined to be necessary, as the public would have the opportunity to review and comment on these project components in this DEIS. These project modifications reduce the overall disturbance footprint associated with the proposal and are intended to ensure that project components are implementable and operational should they be approved. Further rationale for the changes made following scoping are included in **Section 2.5**. All changes to the project components are reflected relevant action alternative analyses within this DEIS.

1.7 Issues and Indicators

Based on internal conversations between the ID Team, SE Group, and its subcontracting subject matter experts, and incorporating input from public scoping, specific areas of concern have been identified and classified as being either “*issues*” or “*resources dismissed from further documentation*.” *Issues* may warrant the generation of an alternative, can be addressed by PDC or mitigation, or generally require in-depth analysis and disclosure. *Resources dismissed from further documentation* are beyond the scope of the project, are already decided by law, regulation or policy, or are not relevant to the decision. For this analysis, all typical Forest Service managed resources have been considered and none have been dismissed from analysis.

Each *issue* below includes a list of indicators which were identified as a means of measuring or quantifying the anticipated level of impact on a particular resource. While some indicators are necessarily qualitative in nature, every effort was made to utilize indicators that are quantitative, measurable, and predictable. A summary of projects included that may cumulatively affect these resources and indicators is included in **Appendix A**.

1.7.1 The Human Environment

RECREATION

The action alternatives have the potential to affect the existing recreational opportunities and experiences within GTR's existing and proposed operational area and nearby NFS lands during both the winter and summer seasons.

Study Area: GTR's existing and proposed operational area, as well as proximate areas in Teton Canyon, South Leigh Canyon and the Jedediah Smith Wilderness (JSW) beyond the operational boundary that may be affected by the action alternatives

Indicators:

- Quantification of existing and proposed terrain acreage by ability level compared to the existing condition and industry standards.
- Both quantitative and qualitative discussion of the change in skier density (how crowded the ski runs are) in relation to guest experiences as compared to existing conditions.
- Quantification of existing and proposed Comfortable Carrying Capacity (CCC) and skier visitation as compared to existing conditions.
- Quantitative and qualitative discussion of existing and proposed guest service space and other amenities as it relates to guest experience.
- Qualitative discussion of existing and proposed use of backcountry areas within the study area (Teton Canyon and South Leigh Canyon).
- Qualitative discussion of GTR guests leaving the resort via Teton Canyon.
- Qualitative analysis and discussion of existing and proposed guest experiences for winter and summer recreation activities at GTR, including the experience of non-skiing guests during the winter months.
- Qualitative analysis of existing and proposed user demand and access in the South Bowl and Mono Trees proposed expansion areas for winter and summer recreation activities occurring beyond GTR's existing operational boundary (e.g., snowmobiling, backcountry skiing, splitboarding, snowshoeing, mountain biking, hiking).
- Qualitative discussion of increasing developed recreation opportunities to concentrate recreation use and reduce the strain on other developed/dispersed recreation sites throughout the district as compared to existing conditions.
- Qualitative discussion of existing outfitters/guides operating in the area of the proposed SUP expansion and the potential change as the result of the Action Alternatives.
- Qualitative discussion of season of use for each activity and change in recreation opportunities both within the existing SUP and in the proposed expanded SUP under the Action Alternatives as compared to existing conditions.

SCENERY

Through the expansion of GTR's operational boundary into lands previously beyond GTR operations (including installation of new infrastructure and other terrain alterations), the action alternatives have the potential to affect the scenic integrity and dark skies of surrounding lands, including from GTNP, the

JSW, the Teton Scenic Byway, Teton Canyon and the identified critical viewpoints in the vicinity. In addition, the proposed expansion in the South Bowl and Mono Trees areas would change the Forest Plan Management Prescription from 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites*.

Study Area: GTR’s existing and proposed operational area as visible from relevant viewpoints

Indicators:

- Identification of direction for scenery management as provided by the *1997 Forest Plan*, including relevant standards and guidelines, established Visual Quality Objectives (VQOs) and discussion of the necessary amendments to the *1997 Forest Plan* and qualitative discussion of potential changes under the Action Alternatives.
- Identification of direction for scenery management as provided by the *Built Environment Image Guide* (BEIG), including guidelines for materials, colors and reflectivity and adherence to under the Action Alternatives.
- Qualitative analysis of scenic impacts including changes in views from the foreground, middleground, and background distance zones as well as changes in form, line and color from existing conditions from the identified critical viewpoints (including identification of view duration and intensity from each): Ashton, Buck Mountain Pass, Colter Building top floor (Driggs; winter and summer), Grand Teton (summit), Hastings Lane (Driggs; winter and summer), Hurricane Pass, Lower Saddle (between the Middle and Grand Tetons), Middle Teton (summit), Mount Meek Pass, Paintbrush Divide, Teton Canyon Overview Observation Site, South Leigh Lakes, South Teton/Devil Stairs Trail, Static Peak, Table Mountain (JSW; winter and summer), Teewinot Mountain, Teton Scenic Byway, and Tetonia, ID (winter and summer).
- Visual simulations would be considered for all critical viewpoints within (or near) 6.9 miles of the project area. A qualitative discussion of existing conditions of GTR operations as compared to the Action Alternatives would be completed from the following viewpoints: (1) Table Mountain, (2) Teton Canyon valley floor, (3) Driggs, and (4) Middle Teton.
- Qualitative analysis of visual simulations completed from viewpoints outside the 6.9-mile buffer zone of changes in dark sky designations as the result of night lighting under the Action Alternatives.
- Quantification of the change in acreage of the existing condition meeting established VQOs from each visual simulation under each Action Alternative.
- Qualitative analysis of the existing visual quality of the study area as compared to proposed visual quality through review of visual simulations, including from the Teton Scenic Byway (SH 31 from Swan Valley to Victor; SH 33 from Victor to Tetonia; SH 32 from Tetonia to SH 47 at Ashton).

NOISE

Construction and operation of the proposed projects could affect noise levels in the study area.

Study Area: The extent of the existing and proposed GTR SUP area, as well as adjacent public and private lands.

Indicators:

- Qualitative discussion of major noise sources, both direct and indirect, and sensitive receptors in the study area and impacts associated to the Action Alternatives.
- Qualitative discussion of existing noise levels in the study area and changes incurred as a result of the Action Alternatives.
- Quantitative and qualitative description of potential noise-related impacts associated with construction and operation of the proposed projects (e.g., use of heavy equipment and helicopters for construction, potential use of avalanche mitigation equipment during operation, traffic-related noise, concert and restaurant noise), including to the adjacent JSW as compared to existing conditions.

SOCIOECONOMICS

Implementation of the proposed projects could potentially alter certain socioeconomic characteristics of Teton County, Idaho and Teton County, Wyoming due to additional visitation and employees and their impacts within the community.

Study Area: Teton County, Idaho; Teton County, Wyoming; Madison County, Idaho; Bonneville County, Idaho

Indicators:

- Quantitative analysis of potential effects to socioeconomic factors in the study area, including: population, employment (part-time seasonal employment vs. full-time equivalents), City/County tax revenue, housing, affordable housing, wages, schools, use of public/social services, public transportation and infrastructure, and visitor spending as compared to existing conditions.
- Qualitative and quantitative discussion of available housing and affordable housing in the study area during both the winter and summer seasons, including designated employee housing and short-term rentals and analysis of expected impacts as a result of the Action Alternatives.
- Qualitative and quantitative discussion of county funding and tax revenues in the study area and how they are expected to change or stay the same as a result of the Action Alternatives.
- Qualitative discussion of the values, beliefs and attitudes about the quality of life within the study area and how they are expected to change or stay the same as a result of the Action Alternatives.

TRAFFIC AND PARKING

The action alternatives may generate additional daily/seasonal visitation, thereby affecting traffic and parking within the study area.

Study Area: Teton Pass between Jackson, Wyoming and the Idaho border; SH 33 between the Idaho border and Teton; Alta Ski Hill Road from Driggs to GTR; feeder roads for State Line Road and Ski Hill Road (e.g., East 5000 North, East 2500 North, East 250 North, South 1000 East and East 2000 South); and parking at GTR.

Indicators:

- Quantification of baseline and estimated traffic volumes under the action alternatives in the study area as related to GTR's operations, during winter and summer months including estimated traffic generated by timber removal and construction activities

- Qualitative and quantitative discussion of existing parking as compared to the expected need of parking under the Action Alternatives to determine if existing available parking is sufficient to service parking needs associated with implementation of the action alternatives. Including discussion of the potential need for offsite parking and an expanded shuttle service to accommodate existing and proposed parking demand. The analysis would rely upon existing parking data collected/maintained by GTR

CULTURAL RESOURCES

Construction of the proposed projects and associated ground disturbance both within existing SUP area and the proposed SUP expansion area, may affect previously unidentified cultural and heritage resources in the Area of Potential Effect (APE).

Study Area: The APE is comprised of lands within GTR's existing SUP area on which projects causing ground disturbance are proposed, as well as lands within the proposed SUP expansion area

Indicators:

- Documentation of the presence (or absence) of identified cultural/heritage resources within the APE including a qualitative discussion of expected impacts as the result of the Action Alternatives
- Documentation of impacts to any eligible National Register of Historic Places (NRHP) sites including a qualitative discussion of expected impacts as the result of the Action Alternatives

PUBLIC SAFETY

Implementation of proposed projects could affect public safety in the study area by altering avalanche mitigation protocols.

Study Area: The extent of the existing and proposed GTR SUP area, and in particular South Bowl

Indicators:

- Description of the existing level of avalanche danger and avalanche mitigation protocols in the South Bowl area based on existing data, including discussion of the role of solar aspects in avalanche danger and comparison of changes to the level of avalanche danger and avalanche mitigation protocols under the Action Alternatives
- Discussion of potential changes in demand on emergency service providers resulting from potential expansion in South Bowl and Mono Trees (in response to concerns from the Sheriff's department about the displacement of users into new and more distant areas beyond the existing operational boundary)

1.7.2 The Physical and Biological Environment

AIR QUALITY

Construction and operation of the proposed projects (including short-term construction-related activity, burning, and transportation related to timber removal) could result in localized impacts to air quality.

Study Area: Teton County, Wyoming

Indicators:

- Narrative description of existing air quality in the study area, including population centers and Class I and Class II airsheds in the vicinity and associated impacts as a result of the Action Alternatives.
- Estimated daily increase in number of vehicles associated with the estimated increase in annual visitation.
- Narrative discussion of timber removal techniques (e.g., burning) and their potential effect on air quality in the region under existing conditions and as the result of the Action Alternatives.
- Quantitative analysis of short- and long-term emissions due to construction and operation of the projects.

CLIMATE CHANGE

Construction and operation of the proposed projects (including short-term construction-related activity, burning, and transportation related to timber removal) would result in greenhouse gas (GHG) emissions. In addition, climate change has the potential to impact the operation of the proposed projects.

Study Area: Teton County, Wyoming; Northern Rockies Region

Indicators:

- Quantitative analysis of the potential contributions to climate change of short- and long-term emissions associated with construction and operation of the project (to be captured in the Air Quality analysis and referenced as needed).
- Qualitative discussion of the impact of climate change on the operations of GTR and the proposed projects (in particular, the global warming trend could create operational difficulties for south-facing slopes and lower elevation ski terrain).

VEGETATION

Vegetation cover types and age class composition may be impacted under the proposed projects relative to the desired condition identified in the 1997 Forest Plan. Federally-listed plant species, rare plants (including Forest Service Region 4 sensitive species and species of local concern [SOLC]), other native plant communities (including overstory vegetation), and the presence of invasive species and noxious weeds may be impacted as a result of the proposed projects.

Study Area: GTR's existing and proposed operational area.

Indicators:

- Qualitative discussion of the presence/absence of federally listed plant species, rare plants, other native plant communities and invasive species and noxious weeds within the study area, including whitebark pine (WPB) and potential impacts/eradication of these species as the result of the Action Alternatives.
- Quantification (acreage) of proposed ground disturbance and resulting effects to vegetation (both understory and overstory) by vegetation type within each terrain pod.
- Quantification of the forested acres of lands designated as Management Prescription 2.8.3 – *Aquatic Influence Zone* that would be converted to Management Prescription 4.2 – *Special Use Authorization Recreation Sites*.

- Quantification of existing old growth and late seral stage stands in the Teton Creek and Leigh Creek Watersheds including discussion of proposed impacts as the result of the Action Alternatives.
- Qualitative discussion of potential impacts to federally listed plant species, rare plants and other native plant communities, as well as the potential for an invasive species and noxious weeds to spread as a result of the action alternatives.

WILDLIFE AND FISH

Implementation of the action alternatives could affect individuals, populations, and/or habitat values for federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species, migratory birds, and SOLC.

Study Area: The study area varies by wildlife species and would be discussed on a species-by-species basis in the Affected Environment subsection of this resource analysis.

Indicators:

- Qualitative discussion of the presence/absence of federally listed and/or sensitive wildlife and fish species, migratory birds and SOLC in the study area, as well as species with the potential to occur in the study area and potential impacts on these species as the result of the Action Alternatives.
- Quantification (acreage) of existing habitat of federally listed and/or sensitive wildlife and fish species, migratory birds and SOLC in the study area, and proposed disturbance to that habitat by species as the result of the Action Alternatives.
- Quantification (acreage) of fragmentation of forest habitat that would result from the Action Alternatives and discussion of adherence to relevant standards from the *1997 Forest Plan* and the Northern Rockies Lynx Amendment.
- Analysis of direct and indirect impacts to lynx through percent change in denning, foraging, and overall suitable lynx habitat as well as existing and proposed road density in the lynx analysis unit (LAU) as the result of the Action Alternatives.
- Analysis of direct and indirect impacts to grizzly bears within the Bear Analysis Unit, including quantification of percent change in secure and non-secure habitat, potential human/bear conflicts and displacement resulting from noise and human presence during construction and operation as the result of the Action Alternatives.
- Analysis of direct and indirect impacts to bighorn sheep, including percent change in suitable habitat, percent change of modeled high-quality habitat on the CTNF and range of the Teton Range herd of bighorn sheep, and displacement resulting from increased noise and human presence during construction and operation (including in backcountry areas) as the result of the Action Alternatives.
- Analysis of short term and long term direct, indirect, and cumulative impacts to avian species as a result of tree removal and amendments to the *1997 Forest Plan*, including the removal of trees for glade development as boreal owls, flammulated owls, three-toed woodpeckers and American goshawks are likely found in those areas.
- Analysis of short term and long term direct, indirect, and cumulative impacts to Columbia spotted frogs and western toads based on riparian habitat development impacts.

- Qualitative discussion of short term and long term direct, indirect, and cumulative impacts to migratory birds as a result of habitat removal from trail development and the increased number of structures with windows.

SOILS

Ground disturbance, including tree clearing and grading associated with construction and operation of the proposed projects, as well as proposed snowmaking, have the potential to increase erosion and soil compaction within the study area. In addition, bare mineral soil exposed on steep slopes as a result of the heavy equipment use could funnel through downhill channels and increase soil erosion.

Study Area: Areas within GTR's existing and proposed operational area where ground disturbance would occur.

Indicators:

- Qualitative discussion of the existing soil map units or land types present in the study area based on (USDA) Natural Resources Conservation Service soil mapping data and the Forest Service Terrestrial Ecological Unit Inventory, interpretive factors such as erosion potential and instability ratings, and the potential impacts to soils associated with the Action Alternatives.
- Summary of the increased erosion hazard resulting from temporary and permanent ground disturbance, as presented in the [Hydrology Technical Report](#) and corresponding EIS section.
- Qualitative discussion of applicability of and consistency with the standards and guidelines of the *1997 Forest Plan* as the result of the Action Alternatives.
- Quantification of disturbance type by soil map unit and loss of topsoil/organic layer/forest floor material as the result of the Action Alternatives and potential change from existing conditions including short and long term impacts.
- Qualitative discussion of short and long term impacts to soils in areas that are chipped and burned as the result of the Action Alternatives and potential change from existing conditions.

HYDROLOGY

The action alternatives could alter watershed conditions, stream and riparian health, and surface water and groundwater quality, quantity, and distribution in the study areas. In addition, the proposed SUP expansions would change several areas from *1997 Forest Plan* Management Prescription 2.8.3 – *Aquatic Influence Zone* to Management Prescription 4.2 – *Special Use Authorization Recreation Sites*.

Study Area: Targhee Principal Watersheds (TPW) 019-Teton Creek and 020-Leigh Creeks, and the three sixth-level hydrologic unit codes (HUC) that intersect the existing & proposed SUP boundaries clipped to the Forest boundary: 170402040202-Teton Creek, 170402040205-Dry Creek, and 170402040402-South Leigh Creek. These areas were chosen to evaluate hydrologic disturbance as per the *1997 Forest Plan*. Additional areas may be added if determined necessary during the analysis.

Indicators:

- Discussion of existing and proposed Hydrologic Disturbance (HD), in response to the *1997 Forest Plan* guideline stating: “Not more than 30% of any of the principal watersheds and their subwatersheds should be in a hydrologically disturbed condition at any one time” (USDA Forest Service, 1997).

- Quantification (acreage of AIZ and miles of stream type) of the amount of Management Prescription 2.8.3 – *Aquatic Influence Zone* that would be converted to Management Prescription 4.2 – Special Use Authorization Recreation Site as the result of the Action Alternatives.
- Quantification of existing and proposed disturbance (acres and/or miles of streams affected) in AIZs by activity type as the result of the Action Alternatives.
- Qualitative identification of existing surface erosion, water quality, and stream and riparian health, as well as analysis of potential effects to these metrics and projected change as the result of the Action Alternatives.
- Identification of any Clean Water Act (CWA) impaired or threatened waterbody segments within the study area and discussion of potential impacts as the result of the Action Alternatives.
- Quantification of existing and proposed snowmaking operations, including anticipated changes in water quantity (e.g., water yield [acre-feet], peak flows [cubic feet per second]) and water quality which may result from tree removal and new snowmaking withdrawals and runoff.
- Sufficiency of water determination for resort operation under existing and proposed conditions.
- Analysis of potential impacts to downstream water quality resulting from runoff at GTR being transported through subsurface channels as the result of the Action Alternatives, including a discussion of changes from existing conditions.

WETLANDS

Identified wetlands and other waters of the U.S. throughout the study area could be temporarily and/or permanently affected by construction and implementation of proposed projects.

Study Area: GTR's existing and proposed operational area.

Indicators:

- Qualitative discussion of area of wetlands and other Waters of the U.S. within the study area (acres/linear feet) that would be impacted by the Action Alternatives.
- Disclosure of wetland functions and values within the study area and discussion of potential impacts as the result of the Action Alternatives.
- Narrative description of wetland communities, classifications and disclosure of anticipated temporary and/or permanent impacts (acres/linear feet) as the result of the Action Alternatives.
- Quantification of existing and proposed disturbance in AIZs by activity type.
- Description of compliance with Executive Order 11988 & 11990 (Floodplain Management & Protection of Wetlands, respectively) under all Action Alternatives.
- Discussion of consistency with standards identified in the *1997 Forest Plan* under all Action Alternatives.

WILDERNESS

Implementation of the proposed projects could impact the JSW.

Study Area: JSW area lands within approximately five miles of GTR (and in particular any areas with line of sight and/or within earshot of resort operations).

Indicators:

- Qualitative analysis of potential impacts of the proposed projects on the wilderness character and wilderness characteristics (untrammelled; natural; undeveloped; outstanding opportunities for solitude or a primitive and unconfined type of recreation) of the JSW. Discuss particularly visual impacts, increased access and use, construction (including increased noise) and avalanche mitigation.

LIVESTOCK AND GRAZING

The proposed projects could potentially alter grazing allotment units within the area of the proposed SUP expansion.

Study Area: GTR's proposed operational area.

Indicators:

- Identification of the relevant grazing allotment units in the study area: Leigh Creek and Mill/Teton allotments; Fred's Mountain and Mill Creek pastures.
- Narrative description of existing grazing patterns within and around GTR's proposed SUP area.
- Qualitative analysis of potential changes to grazing patterns in the area of the proposed SUP expansion, and identification of potential conflict between permit holders in the study area.

1.8 Scope of the Analysis

Scope consists of the range of actions, alternatives, and impacts to be considered within this DEIS. Furthermore, it includes the spatial and temporal boundaries associated with the actions, alternatives, and impacts as the scope of the analysis relates to the Purpose and Need. A detailed scope of this environmental analysis is presented at the beginning of each resource section in **Chapter 3**. The study area is determined by individual resource analyses presented in **Chapter 3** (e.g., the Watershed analysis area is spatially different from the Wildlife analysis area). The project area is specific to each project location and is related to the area of direct impacts caused by the project. Contingent upon approval, implementation of proposed projects could begin as early as 2025. It is important to note that implementation of the projects could occur jointly, individually, and/or at different points in time.

1.9 Consistency with Forest Service Policy

Because GTR's operations are primarily carried out on NFS lands, projects must comply with relevant Forest Service policy. The *1997 Forest Plan* guides the management of NFS lands on the Targhee management unit of the CTNF, including those that the ski area operates on under its SUP. Effectively, this serves as the primary guiding document for the management of lands within the GTR SUP boundary. Additionally, the 2011 SAROE and Forest Service Manual 2343.14 provide guidance on multi-season activities at ski areas operating on NFS lands. As multi-season activities are also included in this proposal, these policies are further described in the following paragraphs.

1.9.1 Targhee National Forest Revised Forest Plan

GTR's operations carried out on NFS lands must comply with management direction provided in the *1997 Forest Plan*. The Targhee Forest Plan includes 33 separate Management Prescriptions for different

portions of the Forest based on ecological conditions, historic development and anticipated future conditions.

Components of the action alternatives fall primarily within the Management Prescription 4.2 – *Special Use Permit Recreation Sites*. However, the proposed SUP expansion areas are located outside of GTR’s existing SUP boundary on land that is currently designated as Management Prescription 2.1.2 – *Visual Quality Maintenance* and Management Prescription 2.8.3 – *Aquatic Influence Zone*.² A programmatic amendment to the *1997 Forest Plan* would be required to incorporate the proposed expansion areas into the GTR SUP area and designate them as Management Prescription 4.2 – *Special Use Permit Recreation Sites*. Under the *1997 Forest Plan*, Management Prescription 4.2 – *Special Use Permit Recreation Sites* prevails over other Management Prescriptions. Therefore, for those areas currently classified as Management Prescription 2.8.3 – *Aquatic Influence Zone* within Management Prescription 2.1.2 – *Visual Quality Maintenance*, only the underlying Management Prescription 2.1.2 – *Visual Quality Maintenance* would be changed to Management Prescription 4.2 – *Special Use Permit Recreation Sites* under action alternatives that would incorporate SUP expansion areas into the GTR SUP boundary. In other words, Management Prescription 2.8.3 – *Aquatic Influence Zone*, would persist under proposed conditions; however, it would be superseded by the direction of Management Prescription 4.2 – *Special Use Permit Recreation Sites* and therefore the standards and guidelines of Management Prescription 2.8.3 – *Aquatic Influence Zone* would no longer apply to the area. Specifically, 741 acres of Management Prescription 2.1.2 – *Visual Quality Maintenance* would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites*, and 125 acres of management Prescription 2.8.3 – *Aquatic Influence Zone* would now be managed under Management Prescription 4.2 – *Special Use Permit Recreation Sites* (1997 Forest Plan III-107).

The *1997 Forest Plan*’s Management Prescription 4.2 – *Special Use Permit Recreation Sites* directs:

“The emphasis is on providing privately operated types of recreation on National Forest land for large concentrated groups of people. Overall, you find many signs of people. You see little or no evidence of resource development except for recreation. Cabins and buildings used by permittees are visible but blend into the surroundings. Roads are generally graveled, but may be paved in higher use areas. OHV use is limited to entry and departure routes and for administrative purposes. In some areas you may see extensive development associated with ski areas or resorts-for example, buildings, ski lifts, maintenance equipment, etc. Many pedestrians and cars may be seen in these areas.

You generally would not find livestock within these areas, but they may be visible nearby. Signs and sounds of logging may also be apparent from time to time.

Wildlife, in the form of chipmunks, squirrels, birds, and occasional big game may be seen.

Generally you would find a variety of vegetation conditions from sagebrush to forested land within these areas. The forest cover would vary from mature trees to young seedling and sapling trees. The forest would generally be in a healthy, vigorous condition to provide for safety and provide for a friendly, relaxed outdoor experience. The area around the

² USDA Forest Service 1997

special use facility would generally exhibit a variety of visual conditions, depending on past insect, disease, and fire activity and management's response to those disturbances."

The 1997 Forest Plan's Management Prescription 2.1.2 – *Visual Quality Maintenance* directs:

"Overall you may notice signs of people camping by the roadside. The main road system is paved or gravel-surfaced and well maintained, with gentle grades well suited for sedan travel. Vistas of the surrounding areas provide a variety of high quality views.

The roadside area is dominated by a wide variety of vegetation and landscape forms (e.g. mountain -- peaks, valleys, meadows, streams, etc.) that are easily observed from natural vistas and natural openings along the road. Occasionally, a few older cut areas show tree seedlings, saplings and poles up to 35 feet tall and have a less-disturbed appearing forest floor. Scattered dead trees are seen throughout the forest, but generally it appears healthy and vigorous.

If you watch for wildlife, you may occasionally see an elk, deer, or moose in a natural opening or alongside the road, but generally these are hidden from view by the trees. During the summer and fall, you may encounter cattle or sheep grazing in openings. Signs of intensive management practices, such as burning, spraying, seeding, fences, water developments and gates are normally visually compatible.

Nonmotorized activities, such as hiking, biking or horseback riding may originate from trail or road points along the main road. Some roads and nearby areas are available for year-around snowmobile, motorcycle, and 4 wheel-drive vehicle use."

The 1997 Forest Plan's Management Prescription 2.8.3 – *Aquatic Influence Zone* directs:

"This prescription applies to the aquatic influence zone associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands (such as wet meadows, springs, seeps, and bogs). These areas control the hydrologic, geomorphic, and ecological processes that shape the various water types mentioned above and directly affect aquatic life. They also provide unique habitat characteristics which are important to those plant and animal species which rely on aquatic, wetland, or riparian ecosystems for all or a portion of their life cycle. Many such habitats are locally rare or are sensitive to disturbance (such as fens and thermal springs). Overall, these areas serve as important reservoirs of biodiversity, critical linkages for the interchange of plant and animal genetic material, specialized areas of nutrient cycling and freshwater filtration, storage, and transport, and are important to water quality.

Management emphasis is directed at the application of ecological knowledge to restore and maintain the health of these areas in ways that also produce desired resource values, products, protection, restoration, enhancement, interpretation, and appreciation of these areas.

These aquatic influence zones provide a high level of aquatic protection and maintain ecological functions (e.g., sediment transport, microclimate control, nutrient regulation, and connectivity within the watershed) and processes (e.g., stream channel formation,

plant community development, recruitment of organic material including large wood, and hydrologic cycles) necessary for the restoration and maintenance of habitat for aquatic and riparian dependent organisms. They also maintain future management options.

This management prescription is defined on the ground using boundary widths which may vary by water type, and geographic characteristics. The actual boundaries of the aquatic influence zone, as determined by a person having current knowledge of fluvial geomorphology, of stream-riparian ecology, or both, could be narrower or wider than the prescribed boundary widths.”

As part of this analysis, the alternatives and purpose and need were reviewed to determine consistency with the Forest-wide goals and objectives as well as the specific standards and guidelines for Management Prescription 4.2 – *Special Use Permit Recreation Sites*. The Action Alternatives were compared against pertinent Forest-wide and Management Prescription standards and guidelines. Additional project specific amendments, driven by resource impacts associated with the action alternatives, are described in detail in **Chapter 2**, as well as **Section 3.12** and **Section 3.13**. **Appendix B** contains a full 1997 *Forest Plan* consistency analysis. **Appendix C** describes the amendments to the 1997 *Forest Plan* themselves.

1.9.2 2011 Ski Area Recreational Opportunity Enhancement Act

Most of the 122 ski areas operating on NFS lands in the U.S. are authorized under special use permits per the National Forest Ski Area Permit Act of 1986 (the 1986 Act).³ As originally enacted, the 1986 Act authorized Nordic and alpine skiing at ski areas on NFS lands. In November 2011 Congress enacted SAROE, which amended the 1986 Act to clarify the authority of the Secretary of Agriculture regarding additional recreational uses of NFS lands subject to ski area permits, and for other purposes.

The purpose of SAROE was to amend the 1986 Act in two ways:

1. To enable snow sports (other than Nordic and alpine skiing) to be permitted on NFS lands subject to ski area permits issued by the Secretary of Agriculture under section 3 of the 1986 Act; and
2. To clarify the authority of the Secretary of Agriculture to permit appropriate additional seasonal or year-round recreational activities and facilities on NFS lands subject to ski area permits issued by the Secretary of Agriculture under section 3 of the 1986 Act.

The SAROE amended the 1986 Act by *striking* specific references to “Nordic and alpine” ski areas, facilities, operations, and purposes and *inserting* more general language regarding “ski areas and associated facilities” and “skiing and other snow sports and recreational uses authorized by this Act.” However, for the purposes of this analysis, the most important amendment to the 1986 Act is an insertion to section 3 regarding “Other Recreational Uses.”

Per SAROE, subject to the terms of a ski area permit, the Secretary may authorize a ski area permittee to provide such other seasonal or year-round natural resource-based recreational activities and associated facilities (in addition to skiing and other snow sports) on NFS lands subject to a ski area permit as the Secretary determines to be appropriate.

³ 16 USC 497

Importantly, each activity and facility authorized by the Secretary shall:

- Encourage outdoor recreation and enjoyment of nature;
- To the extent practicable:
 - ♦ Harmonize with the natural environment of the NFS lands on which the activity or facility is located; and
 - ♦ Be located within the developed portions of the ski area;
- Be subject to such terms and conditions as the Secretary determines to be appropriate; and
- Be authorized in accordance with:
 - ♦ The applicable land and resource management plan; and
 - ♦ Applicable laws (including regulations).

Inclusions identified in SAROEa:

Activities and facilities that may, in appropriate circumstances, be authorized include:

- Zip lines;
- Mountain biking terrain parks and trails;
- Frisbee golf courses; and
- Ropes courses.

Exclusions identified in SAROEa:

Activities and facilities that are prohibited include:

- Tennis courts;
- Water slides and water parks;
- Swimming pools;
- Golf courses; and
- Amusement parks.

The Secretary may not authorize any activity or facility if the Secretary determines that the authorization would result in the primary recreational purpose of the ski area permit to be a purpose other than skiing and other snow sports.

1.9.3 Forest Service Manual 2343.14

On April 17, 2014, the Forest Service released its Final Directives for Additional Seasonal and Year-Round Recreation Activities at Ski Areas. Forest Service Manual (FSM) 2343.14 includes this final direction and criteria to help authorized officers determine whether proposals for these activities are consistent with SAROEa. FSM 2343.14(1) includes criteria for evaluating additional seasonal and year-round recreation activities and associated facilities that may be authorized at ski areas. These activities and associated facilities must:

- Not change the primary purpose of the ski area to other than snow sports;
- Encourage outdoor recreation and enjoyment of nature and provide natural resource-based recreation opportunities;

- To the extent practicable, be located within the portions of the ski area that are developed or that would be developed pursuant to the master development plan;
- Not exceed the level of development for snow sports and be consistent with the zoning established in the applicable master development plan;
- To the extent practicable, harmonize with the natural environment of the site where they would be located by:
 - ♦ Being visually consistent with or subordinate to the ski area's existing facilities, vegetation and landscape; and
 - ♦ Not requiring significant modifications to topography to facilitate construction or operations;
- Not compromise snow sports operations or functions; and
- Increase utilization of snow sports facilities and not require extensive new support facilities, such as parking lots, restaurants, and chairlifts.

FSM 2343.14(2) identifies seasonal or year-round recreation activities and associated facilities that may meet these criteria. FSM 2343.14(3) identifies seasonal or year-round recreation activities and associated facilities that may not be authorized. Additional seasonal and year-round recreation activities and associated facilities that are not specifically precluded in FSM 2343.14(3) would be evaluated case-by-case based on applicable regulations and directives.

1.10 Decision to be Made

Based on Forest Service and external public scoping, and evaluation of the context and intensity factors contained in 40 Code of Federal Regulations (CFR) 1508.27, the Forest Service determined that an EIS would be necessary to review, analyze, and document the potential impacts to the human and biological environment anticipated to result from the implementation of the proposed projects. This DEIS is a disclosure rather than a decision document and its purpose is to provide sufficient environmental analysis to support a Record of Decision (ROD).

Based on the analysis documented within this DEIS and a future final EIS, the responsible official, the Forest Supervisor for the CTNF, would decide whether to select the Proposed Action (Alternative 2), Alternative 3 (No SUP Expansion), Alternative 4 (South Bowl, No Mono Trees), Alternative 5 (Mono Trees, No South Bowl), or the No Action Alternative. The Forest Supervisor is not required to choose either an action alternative or the No Action Alternative described herein, but may select components of an action alternative or develop an entirely new alternative created from components of each. In addition to determining which alternative to select, the Forest Supervisor would also determine any required Project Design Criteria (PDC) and Best Management Practices (BMPs). The Forest Supervisor may also require additional PDC and/or BMPs not discussed within this document. The Forest Supervisor may also require monitoring of PDC.

In compliance with FSH 1909.15 Chapter 18, the Forest Service would continually review the relevancy of the analysis and subsequent decision for new and changed conditions as any approved projects are advanced for implementation.

1.11 Other Necessary Permits or Consultation

Decisions by jurisdictions to issue or not issue approvals related to this proposal may be aided by the analyses presented in this EIS (per 40 CFR § 1502.25(b)). While the Forest Service assumes no responsibility for enforcing laws, regulations, or ordinances under the jurisdiction of other governmental agencies, Forest Service regulations require permittees to abide by applicable laws and conditions imposed by other jurisdictions. In addition to requisite Forest Service approvals, the following permits or approvals may be required to implement the Proposed Action:

- United States Fish and Wildlife Service, Endangered Species Act Formal Section 7 Consultation.
- Army Corps of Engineers, Clean Water Act, Section 404 Permit.
- State Historic Preservation Office, National Historic Preservation Act, Section 106 Consultation.
- United States Environmental Protection Agency (EPA) Federal Construction General Permit for stormwater discharges.
- Any applicable state or other permits required by local governments.

Chapter 2. Description of Alternatives

2.1 Introduction

This chapter describes the alternatives considered within this environmental analysis. PDC intended to lessen or avoid potential impacts resulting from implementation of the Proposed Action are outlined in **Table 2.4-1. Project Design Criteria**. For an understanding of differences between Action Alternatives, please refer to **Appendix D**. For more information on specific programmatic and project specific amendments that need to be made in conjunction with each Action Alternative please refer to **Appendix C**.

2.2 Alternatives Considered in Detail

The range of alternatives that the Forest Service ID Team considered for this analysis was bound by the Purpose and Need underlying the Proposed Action, as well as by the issues that arose from internal and external scoping (refer to **Section 1.7**). NEPA requires that an environmental analysis examine a range of alternatives, which would address and potentially resolve conflicts about the proposal. Furthermore, Forest Service Handbook 1909.15 directs the ID Team to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources” (USDA Forest Service 2012).

2.2.1 Alternative 1 – No Action

The No Action Alternative provides a baseline for comparing the effects of the action alternatives. The No Action Alternative essentially reflects a continuation of existing management practices without changes, additions, or upgrades. Under the No Action Alternative, none of the projects described below would be implemented.

2.2.2 Alternative 2 – Proposed Action

Alternative 2 – Proposed Action includes an expansion of the existing GTR SUP boundary, several lift replacements, realignments, and additions, terrain improvements, and the addition of guest services facilities to improve the guest experience. The projects in the Proposed Action would result in disturbance from tree clearing, grading, glading, and selective tree clearing. Activities relevant to each project component that would result in disturbance are described in subsequent sections and a breakdown of disturbance areas by project component is provided in **Table 2.2-1**.

Table 2.2-1. Projected Disturbance Under the Proposed Action

Project Component	Type of Disturbance	Acres
Alternative Winter Activities	Grading	1.9
	Grading and Tree Clearing	3.7
Guest Service Facilities	Grading	2.1
	Grading and Tree Clearing	0.6
Lifts	Grading	19.5
	Grading and Tree Clearing	13.7

Road Construction, Realignment, and Improvement	Grading	36.8
	Grading and Tree Clearing	23.9
Snowmaking	Grading	15.7
	Grading and Tree Clearing	5.8
Summer Activities	Grading	63.9
	Grading and Tree Clearing	56.6
Terrain Development, Glading, Grading	Glading	475.2
	Grading	25.3
	Grading and Tree Clearing	32.1
	Groomable Glades	40.7
	Tree Clearing	118.2
Avalanche Mitigation Infrastructure	Grading	< 0.1
	Grading and Tree Clearing	< 0.1

SPECIAL USE PERMIT/OPERATIONAL BOUNDARY EXPANSIONS

South Bowl Area

Terrain

GTR proposes to expand its existing SUP boundary into the “South Bowl” area adjacent to Peaked Mountain, which would add 266 acres to the resort’s permitted area (refer to **Figure 4**). In addition to naturally occurring undeveloped terrain that would become part of the SUP area under this proposal, GTR proposes to construct developed ski runs in the South Bowl area (see SB-01 to SB-8 in **Figure 4**). In total, developed ski runs would account for approximately 60 acres of the 266-acre South Bowl area that GTR proposes to incorporate into its SUP boundary. The proposed developed trails in the South Bowl area would all be constructed to provide well-defined and smooth skiable surfaces through a combination of grading and tree clearing practices. As such, heavy machinery would be required in certain circumstances to achieve the desired surface. The South Bowl itself is an open, steep bowl on the southside of Peaked Mountain, and GTR intends to maintain its open bowl feel as much as possible. These natural conditions in the South Bowl area would provide unique terrain variety for higher ability level guests within undeveloped portions of the 266-acre expansion area without additional modification.

South Bowl Lift

To serve the terrain in the South Bowl area, GTR proposes the construction of the South Bowl Lift. This lift would be 3,211 feet long and have a capacity of approximately 1,800 persons per hour. It would provide lift service skiing and riding to the South Bowl area and serve as the connection for guests to return to Peaked Mountain and the base area. The lift is planned as a top drive lift, which would reduce the construction and maintenance access needs of the bottom terminal. To accommodate the lift towers, some grading and tree clearing would be required along the lift line, and grading and tree clearing would be required to create space for the lift terminals and skier egress. Fiber

and electricity lines to the top lift terminal of this lift would be provided via an extension of the Colter lines, and communications and fiber lines would be buried along the lift line.

Facilities

GTR proposes facilities at the top and bottom of the South Bowl Lift. The facility at the top terminal would be a ski patrol facility to provide patrol access into the South Bowl area to ensure timely responses to potential accidents in the area and facilitate operations in this proposed area. There is an existing ski patrol facility at the top of the existing Colter Lift; however, given the location of this facility down ridge from the top terminal of the South Bowl Lift and the terrain it serves, there is a need for an additional ski patrol facility to provide for timely ski patrol response, operations, and ultimately public safety. The existing Peaked Mountain road and its proposed extension would provide construction and maintenance access to this facility. The facility at the bottom terminal would be a vault toilet restroom as there are no other restroom facilities between the South Bowl and Sacajawea Lifts. This facility would be accessed by the proposed cat/construction maintenance access route to the base of South Bowl, which would be capable of accommodating a pick-up truck with pumping/maintenance capabilities in the summer months.

Access

Construction and maintenance access to the South Bowl area and to the top of the South Bowl Lift would be provided via an upgraded road to the top of the Colter Lift. GTR also proposes a cat/construction and maintenance route that would provide access to the base of the South Bowl Lift. The route would be approximately 1.5 miles long. This route would provide snowcat access to the bottom terminal in winter months, serving as an option in emergency or lift closure scenarios. In the summer months, this route would be capable of accommodating maintenance vehicles such as UTVs and/or pick-up trucks.

Public Safety

In an effort to mitigate avalanche risk and address public safety in the South Bowl area, GTR proposes to construct a ski patrol facility and install two avalaunchers, a bomb cache, and two permanent avalanche rescue caches⁴ in South Bowl, depicted in **Figure 4**. Operational measures like ropelines, backcountry access points, etc., would be documented in an Operational and Boundary Management Plan (refer to **Table 2.4-1. Project Design Criteria** for more information). The ski patrol facility is described under the *Terrain* and *On-Mountain Infrastructure* header. Both avalaunchers would be located to the east of the bottom lift terminal. One avalanche rescue cache would be located at the base of South Bowl, near the avalaunchers, and the other would be located on NFS lands on the peak west of Mary's Nipple. The avalanche rescue caches would contain rescue equipment for ski patrol use. Installation would involve grading and tree clearing to accommodate the equipment.

Additional details regarding changes that occurred to the South Bowl project component following the public scoping period are detailed in the following **Section 2.5**.

Mono Trees Area

Terrain

In addition to the proposed South Bowl area, GTR proposes to expand its existing SUP boundary to the west to include the Mono Trees area, adding approximately 600 acres to the resort's permitted area (refer to **Figure 5**). Within this area, GTR proposes to construct approximately 97 acres of intermediate and advanced-intermediate trails to provide developed skiing opportunities in the Mono Trees area. Similar to South Bowl, inclusion of Mono

⁴ Avalanche rescue caches are small permanently constructed facilities that store equipment for avalanche rescue like shovels, probes, flashlights, first aid kits, etc. These two caches would be located outside the existing and proposed SUP expansion areas but would cause less than 0.05 acres of disturbance.

Trees into the SUP expansion area would also result in the incorporation of undeveloped, skiable terrain, into the overall GTR terrain network. The undeveloped terrain that would become accessible in the proposed Mono Trees area is primarily characterized by glades and open meadows. Since the Mono Trees area is currently forested, terrain projects would require tree clearing to accommodate trails and glading to accommodate gladed areas. Grading would also be required to provide favorable ski slope angles.

Mono Trees Lift

To serve the terrain in the Mono Trees area, GTR also proposes the construction of the Mono Trees Lift, a chairlift 4,222 feet long with a capacity of 1,800 persons per hour. This lift would provide a quality skiing experience on the slopes of Lightning Peak during periods when the upper mountain experiences poor visibility, high winds, or other weather factors. A similar lift in the Lightning Ridge area was approved for construction in the 1994 ROD with a north-south alignment.

Electricity to the proposed lift would be provided to the bottom terminal from the bottom of the Sacajawea Lift in a catwalk and to the top terminal from the proposed line supplying electricity to the bottom of the Colter Lift, buried in the proposed road connecting the two lifts. Communications and fiber lines would be buried along the lift line and fiber would be routed from the Dreamweaver trail along a proposed road. A chair storage facility is proposed at the top of the lift. Grading and tree clearing would be required to accommodate new lift towers and terminals. An Operations and Boundary Plan would be created prior to lift operations within the Mono Trees pod (refer to **Table 2.4-1. Project Design Criteria** for more information).

Lightning Ridge Guest Facility

To accompany the Mono Trees Lift and associated terrain, GTR proposes to construct a guest facility on Lightning Ridge, at the top of the Mono Trees Lift. The facility would offer limited food service (i.e., outdoor grill and cold sandwiches, snacks, beverages, etc.), a wood stove, and a vault toilet. Its primary purpose would be to provide a warm area for guests coming off the mountain. It would be approximately 1,500 square feet. This facility would only be constructed if the associated Mono Trees projects are approved. This facility may also provide support ski patrol operations (e.g., storage) but that would not be its primary function.

Access

To provide access into the Mono Trees area, two roads totaling approximately 0.9 mile would be constructed (refer to **Figure 5**). One would provide access from the bottom of the Sacajawea Lift, within the existing SUP boundary, to the bottom of the Mono Trees Lift, outside of the existing SUP boundary. The other road would provide access from the Lightning Ridge guest facility to the top of the Mono Trees Lift. This road would be entirely within the existing SUP area but would only be constructed if the Mono Trees area were approved. In total, 2.5 miles of roads would be constructed to provide access to the two SUP expansion areas. Grading and tree clearing would be required for construction of the access roads into Mono Trees. 1997 Forest Plan Amendments

A programmatic amendment to the *1997 Forest Plan* would be required to accommodate the proposed South Bowl and Mono Trees areas located outside of GTR's existing SUP boundary on land that is currently designated as Management Prescription 2.1.2 – *Visual Quality Maintenance* and Management Prescription 2.8.3 – *Aquatic Influence Zone*. Therefore, the proposed development of this ski terrain would require that the *1997 Forest Plan* be amended to incorporate these two areas into the GTR SUP boundary and would result in the conversion of approximately 741 acres from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Authorization Recreation Sites*. Approximately 125 acres of Management Prescription 2.8.3 – *Aquatic Influence Zone* would also be affected under this alternative as the underlying Management Prescription 4.2 – *Special Use Permit Recreation Sites* direction would supersede Management Prescription 2.8.3 – *Aquatic Influence Zone*. As previously mentioned, under the *1997 Forest Plan*, Management Prescription 4.2 – *Special Use Permit Recreation Sites* prevails over other Management Prescriptions; therefore, only the underlying Management Prescription 2.1.2 – *Visual Quality Maintenance* would be amended under action

alternatives that would incorporate SUP expansion areas into the GTR SUP boundary. In other words, Management Prescription 2.8.3 – *Aquatic Influence Zone*, would persist under proposed conditions; however, it would be superseded by the direction of Management Prescription 4.2 – *Special Use Permit Recreation Sites*. No portion of the proposed SUP expansion would occur in areas classified as designated wilderness (Management Prescriptions 1.1.6 – *Designated Wilderness – Opportunity Class I*, 1.1.7 – *Designated Wilderness – Opportunity Class II*, and 1.1.8 – *Designated Wilderness – Opportunity Class III*). Refer to **Figure 1** for a depiction of the proposed boundary expansion and *1997 Forest Plan* Management Prescriptions.

Additional amendments, driven by resource impacts associated with various project components of the action alternatives, are described in the corresponding resource sections within **Chapter 3**. These proposed amendments are project specific, and would amend the *1997 Forest Plan* to exempt the proposed projects from certain resource standards. The aforementioned project specific *1997 Forest Plan* amendments are related to wildlife habitat and are described in detail in **Sections 3.13**. **Appendix B** contains a full *1997 Forest Plan* consistency analysis. **Appendix C** and Section 1.9.1 – Targhee National Forest Revised Forest Plan describes the *1997 Forest Plan* amendments themselves.

LIFTS, LIFT REPLACEMENTS AND REALIGNMENTS (WITHIN THE EXISTING SUP AREA)

The lifts described in the following paragraphs are proposed in addition to the lifts included in South Bowl and Mono Tree areas (discussed in previous section) and are located within the existing SUP area (refer to **Figure 2** for a depiction of existing and proposed lifts within the SUP area).

All lifts would require grading or a combination of grading and tree clearing to accommodate lift towers, utility lines, the lift corridor, lift terminals, and adequate load/unload areas for guests. Each lift project is discussed in greater detail in the following paragraphs. Further, a description of utility lines that would be required for the installation of each lift is described under **Section 2.3**.

Dreamcatcher

The Dreamcatcher Lift is expected to meet its life expectancy shortly after the completion of this NEPA process. As such, GTR proposes to replace the lift with a detachable six-passenger chairlift and gondola configuration, referred to as a “chondola,” with a gondola cabin approximately every 5 chairs. The upgraded lift would be realigned slightly to improve skier egress and accessibility. Specifically, the bottom terminal would be moved slightly to the south to accommodate the larger terminal associated with the chondola infrastructure. The top terminal would also be moved slightly to the south to create a better interface with the proposed Fred’s Mountain top guest facility. This proposed interface between Fred’s Mountain top guest facility and the top lift terminal would provide increased accessibility, particularly for ADA capabilities, and would enable non-skiers to dine on the mountain. Chair storage would be located adjacent to the bottom terminal.

The realignment would be approximately 100 feet longer than the existing lift, with a length of 6,050 feet, and would have a capacity of 2,280 pph. This upgrade would not only address aging infrastructure but would best serve the proposed Fred’s Mountain top guest facility and provide improved out-of-base functions. The configuration was not included in the 2018 MDP; however, the lift capacity would remain the same as is currently depicted in the MDP.

Crazy Horse

GTR proposes a new detachable lift on Fred’s Mountain called Crazy Horse. It would be 3,849 feet long and have a capacity of 1,800 pph. The bottom lift terminal would be located near the Powder Reserve Traverse and the top lift terminal would be located to the southeast of Dreamcatcher top terminal. This alignment would provide better access to trails on Fred’s Mountain and allow skiers and riders to access Fred’s Mountain terrain without having to return to the base area to ride Dreamcatcher Lift. In the event the Dreamcatcher Lift is inoperable, skiers would be

able to access the terrain by riding Sacajawea and Crazy Horse Lifts in succession to reach the top of Fred's Mountain.

North Boundary

GTR is proposing to add a 2,845-foot-long North Boundary Lift to provide access to the terrain from the North Boundary Traverse down to Rick's Basin. This fixed-grip triple lift would have a capacity of 1,200 people per hour and is intended to provide better utilization of the terrain at the far north edge of the resort, as well as providing access to intermediate and advanced terrain that is currently not lift-accessed. Similar to Mono Trees Lift, the North Boundary Lift would help provide a quality ski experience on those days when Dreamcatcher and Blackfoot Lifts cannot be operated due to fog, wind, or other weather factors.

Shoshone

GTR proposes to upgrade the existing Shoshone Lift to a detachable lift. This lift may require realignment to provide better skier circulation, and in which case there would be additional grading needed for the new top and bottom terminal locations. This replacement and possible realignment are accounted for in the disturbance associated with the summer activity zone (refer to the Other Summer Activities discussion below for more information). The upgrade would improve access to surrounding ski trails for lower-ability level guests from ski school using this terrain.

Palmer Platter Surface Lift and Lights

A surface lift is proposed to be installed on *Palmer's Raceway* trail in the Shoshone area called the Palmer Platter. The lift would be aligned along the southside of the tree island between *Big Horn* and *Palmer's Raceway* trails and would be 881 feet long. Lighting is proposed on *Palmer's Raceway* as well. The lift would provide a quick turnaround for athletes training on *Palmer's Raceway* and the lights would allow for longer training sessions during the winter months. Light towers would be installed on each side of the run, each one approximately 150 feet apart, for a total of 10 permanent light towers (5 on each side) proposed in the area (refer to **Table 2.4-1. Project Design Criteria** for more information on lighting related design criteria). The permanent light towers would be installed with concrete foundations approximately 3 feet x 3 feet and would require grading and some combination of grading and tree clearing for installation.

Teaching Carpet

GTR is proposing one new teaching carpet at the base of the Shoshone Lift. The carpet would be approximately 430 feet in length with approximately 265 feet on private land and 165 feet within GTR's SUP area. The carpet would supplement the existing Papoose Carpet by providing additional lift service for first time skiers/riders next to Targhee Village. It would also support a more gradual beginner progression by providing additional, needed beginner terrain for new skiers before graduating to the Shoshone Lift.

TERRAIN AND ON-MOUNTAIN INFRASTRUCTURE (WITHIN THE EXISTING SUP AREA)

Terrain Development, Glading and Grading

Approximately 214 acres of traditional terrain developments and improvements are proposed within the existing GTR SUP area (refer to **Figure 2**). Additionally, improvements to existing glades, combined with additional gladed areas would result in approximately 550 acres of gladed areas across the resort (a portion of this glading extends into the proposed Mono Trees area). Proposed terrain development, glading and grading within the existing SUP area includes:

- New teaching terrain around the new teaching carpet;
- New trails and realignment of key circulation trails (*Teton Vista Traverse*, *Powder Reserve Traverse*, and *Mill Creek Traverse*);

- Two new trails, widening or extending seven trails, and glading in the areas served by the existing Dreamcatcher Lift and proposed Crazy Horse Lift;
- One new trail, lengthen and realign Wild Turkey, and improve tree skiing by *The Good*, *The Bad*, *The Ugly*, and *The East Woods* through glading in the Blackfoot area;
- Two new trails and glading in the Sacajawea area;
- Trail widening and grading along Papoose Creek upon the skiway which would connect the existing Sacajawea Lift and the Colter Lift. Due to this project's proximity to Papoose Creek, it is assumed that coordination with the United States Army Corps of Engineers would be necessary;
- Construction of the trails within the North Boundary area, including six new runs, one new access route/collector trail for the North Boundary area, and two new short access routes to gain entry and exit the area; and

Approximately 25 acres of grading to accommodate the trail construction and improve the skiability of existing trails. In addition to the proposed new trails and glading, a portion of the existing *Peaked* trail network would require select tree removal to accommodate additional skier capacity following the recent installation of the Colter Lift. Among the proposed terrain is groomable glade-style skiing areas. Groomable glades are interconnected ski spaces that consist of a braided network of interwoven ski runs that are cleared to a width of about 50 to 80 feet and separated by small tree islands. This style of ski terrain provides a glade-like skiing experience for lower-level intermediate skiers, as it can be groomed as necessary to maintain or improve the snow surface quality.

Roads

GTR proposes a Mountain Roads Rehabilitation Program for GTR managed mountain roads within the existing and proposed SUP area. These existing non-Forest Service system roads are used exclusively for resort and Forest Service access to GTR and are not open to the public for motor vehicle travel. The Mountain Roads Rehabilitation Program would eliminate steep and no longer necessary access roads, as well as construct new roads to bypass steep grades and improve mountain circulation and maintenance (refer to **Figure 3**). The overhaul of the mountain road network would allow GTR to reduce erosion and sedimentation and better maintain on-mountain infrastructure. Key features of this program include realign and reconstruct the *Teton Vista Traverse (TVT)*, *Powder Reserve Traverse (PRT)*, Rick's Basin Access Road, spur road connecting the switchback on Peaked Mountain to the proposed South Bowl mountain road, and *Mill Creek Traverse (MCT)*. In total, 7.0 miles of roads would be improved, 4.3 miles of roads would be constructed, and 2.2 miles of roads would be reclaimed. Grading and a combination of grading and tree clearing would be required for road reclamation, improvement, and construction.

In addition to roads within the SUP area, GTR proposes the construction of access routes into South Bowl and Mono Trees areas. These routes are described in detail under the South Bowl and Mono Trees sections previously.

Snowmaking

GTR proposes 57 acres of snowmaking to improve lower-mountain circulation routes and high use trails (refer to **Figure 6**). By expanding their snowmaking infrastructure, GTR would be able to provide better snow surface and early season conditions. Snowmaking would be installed on the following trails:

- Lower portion of *Chief Joseph Bowl* (4.3 acres)
- *The Funnel* (3.5 acres)
- *Big Thunder* (7.5 acres)
- *Sitting Bull Ridge* (11.6 acres)
- *Headwall Traverse* (2.1 acres)
- *Big Scout* (4.6 acres)

- *Little Beaver Traverse* (4.9 acres)
- *Mill Creek Traverse* (3.4 acres)
- *Tubing Hill* (0.9 acres)
- *Blackfoot Access Route* (1.5 acres)
- *Teaching Carpets* (1.9 acres)
- *Teton Vista Traverse* (10.8 acres)

Necessary water for this increased coverage would come from additional groundwater wells. Prior to snowmaking infrastructure development, additional groundwater wells would be developed on private land in GTR's base area. As required by GTR's SUP, water sufficiency for existing and proposed operations is documented in a water sufficiency letter that is on file with the CTNF. This analysis of water supply has determined that GTR's infrastructure can produce sufficient water to operate the currently permitted portion of the ski area and provide for the activities authorized in its operating plan. The proposed 57 acres of additional snowmaking could also be accommodated by the existing water supply systems at GTR; however, as GTR continues to develop their base area infrastructure on private lands (as approved under the 2019 First Amended Master Plan – Planned Unit Development for Planned Resort), their groundwater infrastructure would have to be expanded. Accordingly, GTR would apply for a new well permit with the Wyoming State Engineer's Office and then develop up to two additional wells on private land to meet the future water supply demands associated with the proposed snowmaking coverage. The timing for new wells is subject to the pace of development of the resort.

Snowmobile Rescue Cache

In coordination with the Forest Service and Teton County Search and Rescue, GTR proposes to install a snowmobile rescue cache to the south of the South Bowl area, in Teton Canyon. It would be located adjacent to the existing winter trails in Teton Canyon in order to provide additional safety equipment in case of emergencies. This rescue cache would be a small facility potentially placed on a 4x4 above ground with proper signage for emergency personnel to find. It currently has a disturbance of 0.005 acres, so is very small. This project component would be relevant with or without the inclusion of the South Bowl boundary expansion as backcountry usership of this area is anticipated regardless of South Bowl projects.

Guest Services Facilities

All proposed facilities are intended to improve the guest experience by offering services such as food and beverage, improved customer service through additional staff resources, and areas to escape the weather on the mountain. Constructing the facilities would require either grading or grading and tree clearing to accommodate building foundations and entry and egress around facilities.

Fred's Mountain Top Guest Facility

GTR proposes to construct a full-service on-mountain guest service facility at the summit of Fred's Mountain, south of the existing Dreamcatcher Lift top terminal. This facility would serve many functions. It would serve as a central on-mountain location for skiers and riders within the Dreamcatcher and Crazy Horse areas, which would eliminate the need to descend to Targhee Village for basic services, but also be a destination restaurant offering year-round views of the Tetons. This facility would include a restaurant, bar, restrooms and ski patrol facility. Electricity would be installed from the base area via power lines trenched into existing roads to be upgraded and proposed roads which pass the site of the restaurant (refer to **Figure 3**). Sewer would be a septic system or sanitary sewer line based on engineering recommendations. Water would be supplied from an onsite well, which would be within the disturbance footprint of the proposed facility. The well would need to be permitted by the Wyoming State

Engineer's Office.⁵ Additionally, the proposed Dreamcatcher lift corridor could potentially accommodate additional utilities as it would be disturbed during the lift replacement and trenching would already need to occur for lift related infrastructure and utilities. The building would have simple, linear forms and utilize low-reflective materials to blend with the surrounding environment in sensitivity to viewsheds from GTNP and would comply with the Forest Service's Built Environment Image Guide (BEIG). The facility is proposed for daytime use only. Closure of this facility would be no later than an hour past NOAA's listed sunset time. There would be no major night lighting associated with the proposed project; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations which would primarily occur in the early morning. Outdoor lights would use full cutoff or shielded fixtures that minimize skyglow, glare, and light trespass in order to preserve dark sky values. It would be approximately 7,000 square feet of interior space and approximately 4,000 square feet of outdoor space. The realigned *Teton Vista Traverse* mountain road would provide construction access to the restaurant location.

Sacajawea Restaurant and Guest Facility

In addition to the Fred's Mountain top guest facility, GTR proposes to construct a full-service on-mountain guest service facility at the top terminal of the Sacajawea Lift, to serve the southern side of the resort, including the existing Sacajawea and Colter areas along with the proposed Mono Trees area. This facility would include a restaurant, bar, and restrooms. Electricity would be buried from the top of Sacajawea Lift. Restrooms would be vault toilets, an onsite septic system or a sanitary sewer line, depending on corresponding engineering recommendations. All disturbance associated with septic would be located within previously disturbed corridors or disturbance corridors associated with other proposed projects. Water would be supplied from an onsite well, which would be within the disturbance footprint of the proposed facility. The well would need to be permitted by the Wyoming State Engineer's Office.⁶ The facility is proposed for daytime use only. There would be no major night lighting associated with the proposed project; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations which would primarily occur in the early morning. Outdoor light would use full cutoff or shielded fixtures that minimize skyglow, glare, and light trespass in order to preserve dark sky values. The facility is proposed to offer approximately 6,500 square feet of interior space. Additionally, approximately 2,000 square feet of deck space is proposed for outdoor seating. The upgraded mountain road off the *Powder Reserve Traverse* would provide construction access to the proposed facility location.

Shoshone Guest Facility

To accommodate guests using beginner terrain and the Summer Activity Zone, GTR proposes to construct a guest facility at the top of the Shoshone Lift. The facility would be approximately 1,500 square feet of indoor space and approximately 2,000 square feet of deck or outdoor space. The facility would provide a simple, rustic environment. It would offer services to guests during the day, and also the potential as a dinner destination with access by evening winter sleigh rides or summer horseback rides; access to this location in the summer and winter could be provided via the existing road to be upgraded culminating at the top of the Shoshone Lift (refer to **Figure 3**). This facility would include restaurant seating, a simple kitchen, and restrooms. Electricity would be spired from an existing electricity line supplying Shoshone Lift. A vault toilet would be constructed at the top of the lift. Water would be supplied from an onsite well within the disturbance footprint of the proposed facility or would be transported to the facility. The well would need to be permitted by the Wyoming State Engineer's Office.⁷ The upgraded mountain road to the top of the Shoshone Lift would provide construction access to the facility.

⁵ The proposed onsite well is anticipated to be limited to a diversion of less than 3 acre-feet per year for consumptive and sanitary uses at the proposed facility and would be subject to permitting from the Wyoming State Engineer's Office.

⁶ The proposed onsite well is anticipated to be limited to a diversion of less than 1 acre-foot per year for consumptive and sanitary uses at the proposed facility and would be subject to permitting from the Wyoming State Engineer's Office.

⁷ Ibid.

Rick's Basin Guest Facility

GTR proposes to construct an on-mountain guest facility in Rick's Basin, within the Nordic trail system to support the Nordic trail network. The facility would be outfitted with limited food service (i.e., outdoor grill and cold sandwiches, snacks, beverages, etc.), a wood stove, and a vault toilet. Its primary purpose would be to provide a warm area for guests coming off the mountain. The structure would be approximately 1,500 square feet.

Storage and Vault Toilet Facilities

At the base of the proposed North Boundary storage and vault toilet facilities are proposed. Improving the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility is also proposed. These would provide additional on-mountain storage space for staff to improve guest services and address staffing needs. The North Boundary storage facility would also include a vault toilet; whereas a separate vault toilet already exists at the Blackfoot Lift. The disturbance for these facilities is included in each lift's bottom terminal disturbance footprints.

NON-WINTER AND ALTERNATIVE ACTIVITIES

Summer Recreation Trails

To provide additional summer activities, GTR proposes to construct approximately 29 additional miles of trail to enhance the existing network (refer to **Figure 3**). This includes 6 miles of downhill biking trails, 2 miles of hiking trails, and 21 miles of multi-use trails.

Downhill biking trails would include 9 new trails totaling 6 miles, including:

- Three trails descending from the *Grand Traverse* trail, adjacent to the existing *Tall Cool One* trail,
- A trail descending adjacent to the *Blondie* trail.
- A trail starting at the mountain road just east of the *Sidewinder* trail and ending at the *Bullwinkle* trail,
- A connector trail between the existing *Rock Garden* trail to the proposed Summer Activity Zone,
- A connector trail between *Crazy Horse* and *Sticks and Stones* trails to provide an easier alternative to the existing *Grand Traverse*,
- A re-route around the Summer Activity Zone, and
- A connector between *Rick's* and *Otterslide* trails.

Hiking trails would include 1 new trail totaling 2 miles, including:

- A trail from *Mary's Saddle* to the base area.

Multi-use trails would include 17 new trails totaling 21 miles, including:

- A *Tall Cool One* cutoff trail,
- An extension for the existing *North Woods* loop, starting at the base of the *North Woods* trail and connecting with the *Quakie Ridge* trail,
- A connector trail between the proposed *North Woods-Quakie Ridge* connector and the bottom of the *Quakie Ridge* trail,
- A *Quakie Ridge* extension trail,
- A loop with a variety of switchbacks starting and ending along *Rick's Basin* trail,
- A beginner loop in between the *Rick's Basin* and *Snowdrift* trails,
- An outer loop on the western edge of the SUP boundary, extending from the *Roundabout* trail and terminating at *Greenhorn Access*,

- A shorter, beginner loop inside the existing *Jolly Green Giants* trail,
- A trail from *Colter's* to *Peaked* trails,
- A new trail from *Ain't Life Grand* to *Peaked* trails, with a segment extending west past the *Peaked* trail,
- A trail extending from *Action Jackson*, intersecting with *Andy's* and *Trail 3*, and connecting with the proposed *Ain't Lift Grand-Peaked* trail,
- A trail descending from the top of the Colter Lift to the northern tip of the *Ain't Life Grand* trail,
- A loop extending from Ski Hill Road and the base area, intersecting with the base of the Sacajawea Lift and the *Action Jackson* trail,
- An outer trail around the *Buffalo Soldier* trail, connecting *Buffalo Soldier* and *Rocky Mountain Way*,
- A loop extending from the *38 Special* trail,
- A trail connecting the existing *38 Special* and *Peaked* trails,
- A connector trail between the northernmost proposed downhill mountain biking trail to the existing *Bring it On Home* trail in the Summer Activity Zone.

Trail construction would occur primarily on NFS lands, although some construction would occur on GTR's private parcels. Construction would involve grading to create an appropriate surface for the intended trail experience as well as some grading and tree clearing in forested areas. With the construction of these new trails, demand for additional trail infrastructure could be satisfied, and trail-based recreational opportunities would be augmented in the area. The proposed trails offer an ideal opportunity for GTR to assist the CTNF in stewarding the land.

Other Summer Activities

GTR proposes to focus their multi-season recreation opportunities in and around Shoshone Lift area (refer to **Figure 3**). This area was called the Summer Activity Zone in the 2018 MDP and was allocated for high density of activities and concentrated use. This is an ideal location for GTR's summer activity hub because it is an accessible location for a wide range of guests. The moderate terrain allows for guests to experience the natural environment in a structured area. Activities in this area could include a canopy tour/fly line, zip line, and aerial adventure course. These activities would be located on Forest Service lands.

While the Summer Activity Zone was designated to allow for flexibility in locating activities and accommodate new activities as summer recreation evolves at ski areas, preliminary sites have been identified as being capable of accommodating certain experiences. The canopy tour or fly line would start west of the Shoshone Lift top terminal. It would be a multi-station tour where guests would travel on an elevated tour through the tree canopy. A canopy tour is a more traditional activity where guests wear harnesses and use short zip lines to travel from station to station, while a fly line is a hybrid mountain coaster/zip line where guests wear harnesses but travel along a track from station to station.

The zip line would start south of the Shoshone Lift top terminal. It would consist of a multi-segment zip line; a shorter segment to get guests familiar to the zip line harness and equipment and a second zip line of more than 2,000 feet over the event area.

The aerial adventure course would start northeast of the Shoshone Lift bottom terminal or uphill of the event area. This elevated challenge course includes a series of elements of varying length and difficulty for both adults and children.

The disc golf course would also be re-located within the Summer Activity Zone to the north of the proposed canopy tour/fly line.

It is assumed that the entirety of the Summer Activity Zone would be disturbed through construction of the activities within, and this is reflected in its disturbance footprint that is carried through this analysis.

Alternative Winter Activities

GTR also proposes a permanent, dedicated snow tubing facility located to the west of the Sioux Lodge on NFS lands (refer to **Figure 2**). The facility includes lighting for night operation and snowmaking infrastructure sufficient to ensure quality construction and maintenance of tubing lanes (refer to **Section 3.2 – Scenery** for more information). Electricity to this location would likely be provided by a power line connecting to the base terminal of the Shoshone Lift. The proposed snowtubing facility would be located in a previously disturbed area within the GTR base area and snow would be used to construct the tubing lanes. No tree clearing or grading would be required. Proposed snowmaking coverage for the tubing facility totals approximately 2 acres.

GTR also proposes to expand the Nordic, snowshoeing and fat biking offerings. To improve access to Rick’s Basin, GTR proposes to realign and re-grade the existing, steep trail segment from the base terminal of Blackfoot Lift into Rick’s Basin eliminating the existing steep grade. Additionally, the existing Nordic trail and alpine ski-out trail connecting the bottom terminal of the Blackfoot Lift with *Little Beaver Traverse* would be graded to make the slope more consistent and to increase the width of trail for dual-use by alpine and Nordic skiers. A total of approximately 1.4 miles of Nordic trails would be constructed to improve connectivity with the Rick’s Basin trails. A portion of these new Nordic trails would be established on private lands and near the tubing center to tie Nordic skiing into the Targhee Village and introduce additional trail variety. As discussed previously, an approximately 1,500 square foot Rick’s Basin Guest Facility with vault toilets and potable water would also be located within the Rick’s Basin trail network.

2.2.3 Alternative 3 – No SUP Expansion

Alternative 3 is intended to respond to a variety of resource concerns associated with the SUP expansion into South Bowl and Mono Trees, including:

- Wildlife (bighorn sheep and Canada lynx in particular);
- Recreation (impacts to backcountry skiers and SUP holders);
- Socioeconomics concerns associated with increased capacity causing a commensurate increase in visitation, including impacts to affordable housing; and
- Scenery.

Alternative 3 excludes any proposed expansion of the SUP area, but includes all projects proposed within the existing SUP area. More specifically, under Alternative 3, there would be no expansion of the SUP into the South Bowl or Mono Trees area, meaning no programmatic amendment of the *1997 Forest Plan* Management Prescriptions would be needed under this alternative. Project specific amendments to the *1997 Forest Plan* would still be needed under this alternative and are described within the discussion of environmental consequences contained in **Sections 3.12 and 3.13**. **Appendix B** contains a full *1997 Forest Plan* consistency analysis. **Appendix C** describes the *1997 Forest Plan* amendments themselves.

A breakdown of disturbance areas by project component is provided in **Table 2.2-2**.

Table 2.2-2. Projected Disturbance Under the Alternative 3

Project Component	Type of Disturbance	Acres
Alternative Winter Activities	Grading	1.9
	Grading and Tree Clearing	3.7

Guest Service Facilities	Grading	1.7
	Grading and Tree Clearing	0.4
Lifts	Grading	17.5
	Grading and Tree Clearing	5.8
Road Construction, Realignment, and Improvement	Grading	31.8
	Grading and Tree Clearing	16.9
Snowmaking	Grading	15.7
	Grading and Tree Clearing	5.8
Summer Activities	Grading	63.9
	Grading and Tree Clearing	56.6
Terrain Development, Glading, Grading	Glading	294.9
	Grading	20.7
	Grading and Tree Clearing	18.2
	Groomable Glades	40.7
	Tree Clearing	28.4
Avalanche Mitigation Infrastructure	Grading	< 0.1
	Grading and Tree Clearing	< 0.1

The following project components within the existing SUP area are proposed under Alternative 3 (full descriptions of which can be found under the Alternative 2 – Proposed Action header):

- Lifts, lift replacements and realignments within the existing SUP area, including the new Crazy Horse and North Boundary Lifts, the Dreamcatcher upgrade, the Shoshone upgrade and realignment, the new Palmer Platter Surface Lift and Lights, the new teaching carpet (refer to **Figure 2**);
- Trail improvements and expansions including 107 acres of new traditional terrain, 107 acres of terrain improvements, 204 acres of proposed glades, and 45 acres of groomable glades within the existing SUP boundary (refer to **Figure 2**);
- Rehabilitation of existing GTR managed mountain roads (not open to motorized public access) also known as the Mountain Roads Rehabilitation Program, including eliminating steep and no longer necessary access roads, and constructing new roads to bypass steep grades and improvement mountain circulation and maintenance (refer to **Figure 3**);
- 57 acres of snowmaking to improve lower-mountain circulation routes and high use trails, including the development of additional groundwater wells on private lands to facilitate increased snowmaking coverage (refer to **Figure 6**);

- Construction of two on-mountain restaurants at the top of Sacajawea and Dreamcatcher Lifts, guest facilities at the top of the Shoshone Lift, in Rick's Basin, storage and vault toilet facilities at the base of the North Boundary Lift, and improvement of the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility (refer to **Figure 2**);
- Non-winter and alternative activities, including 29 miles of downhill biking, hiking and multi-use trails (refer to **Figure 3**);
- Other summer activities around the Shoshone Lift area, including a canopy tour/fly line, zip line, aerial adventure course and disc golf course (refer to **Figure 3**); and
- Alternative winter activities, including a snow tubing facility and expansion and improvement of Nordic, snowshoeing and fat biking offerings (refer to **Figure 2**).

2.2.4 Alternative 4 – South Bowl, No Mono Trees

Alternative 4 is intended to respond to resource concerns associated with the SUP expansion into Mono Trees, including:

- Scenery concerns associated with tree removal, chairlift and ski terrain construction;
- Socioeconomics concerns associated with increased capacity at full buildout causing a commensurate increase in visitation, including impacts to affordable housing;
- Public safety concerns associated with increasing usership in South Bowl from Colter Lift (as out-of-bounds/sidecountry terrain) without the option to perform avalanche mitigation in this area (i.e., with South Bowl included in the SUP, GTR would be able to perform avalanche mitigation there to minimize public safety concerns resulting from increased access); and
- Wildlife (Canada lynx in particular).

Alternative 4 includes all projects proposed within the existing SUP area (summarized previously for Alternative 3 and described in full under the Alternative 2 – Proposed Action header), and the proposed SUP expansion into South Bowl (described in full under the Alternative 2 – Proposed Action header), but excludes the proposed SUP expansion into Mono Trees. Alternative 4 would result in 266 acres in South Bowl being added to GTR's SUP area; due to the proposed SUP expansion into South Bowl, Alternative 4 would include a programmatic Forest Plan Amendment to convert approximately 266 acres from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Authorization Recreation Sites* (refer to **Figure 1**). Project specific amendments to the *1997 Forest Plan* would still be needed under this alternative and are described within the discussion of environmental consequences contained in **Sections 3.12** and **3.13**. **Appendix B** contains a full *1997 Forest Plan* consistency analysis. **Appendix C** describes the *1997 Forest Plan* amendments themselves. Refer to **Figures 2, 3** and **6** for proposed winter, summer, and snowmaking projects within the existing SUP area, and **Figure 4** for the proposed expansion into South Bowl. A breakdown of disturbance areas by project component is provided in **Table 2.2-3**.

Table 2.2-3. Projected Disturbance Under the Alternative 4

Project Component	Type of Disturbance	Acres
Alternative Winter Activities	Grading	1.9
	Grading and Tree Clearing	3.7
Guest Service Facilities	Grading	2.1

	Grading and Tree Clearing	0.6
Lifts	Grading	19.5
	Grading and Tree Clearing	8.1
Road Construction, Realignment, and Improvement	Grading	35.1
	Grading and Tree Clearing	22.1
Snowmaking	Grading	15.7
	Grading and Tree Clearing	5.8
Summer Activities	Grading	63.9
	Grading and Tree Clearing	56.6
Terrain Development, Glading, Grading	Glading	294.9
	Grading	20.7
	Grading and Tree Clearing	18.6
	Groomable Glades	40.7
	Tree Clearing	57.1
Avalanche Mitigation Infrastructure	Grading	< 0.1
	Grading and Tree Clearing	< 0.1

2.2.5 Alternative 5 – Mono Trees, No South Bowl

Alternative 5 is intended to respond to resource concerns associated with the SUP expansion into South Bowl, including:

- Wildlife (bighorn sheep in particular);
- Recreation (impacts to backcountry skiers and SUP holders);
- Socioeconomics concerns associated with increased capacity at full buildout causing a commensurate increase in visitation, including impacts to affordable housing; and
- Scenery (including for the JSW and GTNP).

Alternative 5 includes all projects proposed within the existing SUP area (summarized previously for Alternative 3 and described in full under the Alternative 2 – Proposed Action header), and the proposed SUP expansion into Mono Trees (described in full under the Alternative 2 – Proposed Action header), but excludes the proposed SUP expansion into South Bowl. Alternative 5 would result in 600 acres in Mono Trees being added to GTR's SUP area; due to the proposed SUP expansion into Mono Trees, Alternative 5 would require a programmatic amendment to the *1997 Forest Plan* to convert approximately 475 acres from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites* (refer to **Figure 1**). Approximately 125 acres of Management Prescription 2.8.3 – *Aquatic Influence Zone* would also be affected under

this alternative as the underlying Management Prescription 4.2 – *Special Use Permit Recreation Sites* direction would supersede Management Prescription 2.8.3 – *Aquatic Influence Zone*. Project specific amendments to the *1997 Forest Plan* would still be needed under this alternative and are described within the discussion of environmental consequences contained in **Sections 3.12 and 3.13**. **Appendix B** contains a full *1997 Forest Plan* consistency analysis. **Appendix C** describes the *1997 Forest Plan* amendments themselves. Refer to **Figures 2, 3, and 6** for proposed winter and summer and snowmaking projects within the existing SUP area, and **Figure 5** for the proposed expansion into Mono Trees. A breakdown of disturbance areas by project component is provided in **Table 2.2-4**.

Table 2.2-4. Projected Disturbance Under the Alternative 5

Project Component	Type of Disturbance	Acres
Alternative Winter Activities	Grading	1.9
	Grading and Tree Clearing	3.7
Guest Service Facilities	Grading	1.7
	Grading and Tree Clearing	0.4
Lifts	Grading	17.5
	Grading and Tree Clearing	11.4
Road Construction, Realignment, and Improvement	Grading	33.4
	Grading and Tree Clearing	18.7
Snowmaking	Grading	15.7
	Grading and Tree Clearing	5.8
Summer Activities	Grading	63.9
	Grading and Tree Clearing	56.6
Terrain Development, Glading, Grading	Glading	475.2
	Grading	25.3
	Grading and Tree Clearing	31.7
	Groomable Glades	40.7
	Tree Clearing	89.5
Avalanche Mitigation Infrastructure	Grading	< 0.1
	Grading and Tree Clearing	< 0.1

2.3 Construction Practices Common to All Alternatives

For the purpose of the analysis, it is assumed that project construction would generally occur during the snow-free months and would be confined to daylight hours (e.g., within the hours of 7am-7pm). There may be exceptions to this where resource conditions dictate. For example, if over the snow tree removal were determined appropriate from a nesting bird or soil disturbance perspective then construction could extend to months where snow is present.

Further, should the projects included in the Proposed Action occur, implementation would occur over an approximately 10-year period from the time of approval. Project implementation would be subject to capital availability and may be expedited or delayed based on economic conditions that are beyond the scope of this analysis.

During construction of any Action Alternative, some or all of the permitted area would be closed to public access. Closures would apply to both permitted and dispersed use. These closures would be exercised to protect members of the public from potentially harmful conditions due to construction activities.

The existing road network at GTR provides access to existing lifts and trails and would be available for preliminary phases of construction for all alternatives. All alternatives include upgrades to existing roads and the construction of additional roads which would provide sufficient access to areas with proposed projects. Road improvement projects, including new roads, are depicted in **Figure 3**. Prior to starting construction activities, GTR shall develop a Construction Implementation Plan for Forest Service Review and Authorization (see **Table 2.4-1** for more details). Equipment and vehicles would be transported for construction and maintenance purposes via these roads. Low-impact machinery (e.g., a spider hoe) can be used on steep terrain to assist with chairlift and trail construction. Helicopters would assist with tree removal and transporting heavy machinery and infrastructure.

2.3.1 Tree Removal

Tree removal methods are subject to change based on conditions discovered in the field during project implementation and those contracted to complete the tree removal work. What is described in this section is the range of potential methods that could be used for tree removal, which are analyzed in **Chapter 3** based on what is most impactful to a given resource (unless otherwise specified). For example, helicopter use is analyzed in **Section 3.3**, as this is the most impactful tree removal option from a noise standpoint.

Tree removal methods, including in gladed areas, would primarily be accomplished over-the-snow and utilizing the on-mountain road network. No skid roads would be constructed as timber would either be removed over the snow via snowcat, transported over the snow to a deck location accessible from the road network, piled and burned, or removed via helicopter. Low-impact machinery (e.g. a spider hoe or helicopter) may be necessary in areas such as South Bowl with steep terrain to assist with tree removal. In some cases, tree removal in gladed ski areas would require burning. Trees would be hand cut and the vegetation would be burned in smaller piles along the trails within openings cleared for skiing. Pile burning of cleared timber must adhere to the State of Wyoming Burn Permit regulations and would depend on the time of year (i.e. to avoid fire season). Prior to burning timber, GTR must consult with the CTNF on size of slash piles in order to prevent soil sterilization and timing of burning. Hazard trees identified throughout the SUP area during construction would be removed to facilitate safe operation of the proposed terrain for an increased number of guests.

2.3.2 Roads

GTR proposes a Mountain Roads Rehabilitation Program within and adjacent to the existing SUP area. Refer to **Section 2.2.2** for a detailed description of the project. For existing roads to be upgraded, this would primarily occur through additional grading and resurfacing in key areas. These areas have been identified as those that already experience challenges in accommodating existing on-mountain travel or would not be capable of accommodating vehicles and infrastructure associated with proposed projects. Construction equipment and supplies would be

transported via existing roads. For road construction, existing roads would be used to transport heavy machinery and explosives where rock blasting is necessary for sufficient road conditions. Gravel and other surface materials would be supplied as necessary via existing and newly constructed roads. For road reclamation, gravel would be removed and the slope and other characteristics of the surrounding landscape would be restored for the entirety of the reclaimed road sections. To the extent possible, materials from road reclamations would be used for road building and upgrading projects, and materials such as timber from building and upgrading projects would be used to assist the reclamation process.

Portions of specific projects (e.g., towers on a lift line) would utilize temporary construction routes to facilitate their construction. The temporary construction routes would typically be located within the disturbance footprint of other project components and would not require earthwork. Low impact machinery such as spider hoes, light duty trucks, and utility task vehicles (UTVs) would be the only vehicles that would travel on these routes. These routes would be restored and revegetated following construction.

2.3.3 Ski Trails

Most proposed ski trails would require tree removal according to the practices described in **Section 2.3.1**. Select trails might also require grading. This would primarily be done using low-impact machinery such as a spider hoe. Due to the nature of terrain in the South Bowl area, proposed trails in South Bowl would require heavy machinery to create well-defined and smooth skiable surfaces. Rock blasting would also be employed as necessary within certain proposed project areas to remove rock outcroppings.

To expand snowmaking, GTR would dig trenches in trails with proposed snowmaking to install water lines. Equipment and access would be provided via roads or on snow cats via groomable trails. In general, disturbance corridors for proposed snowmaking would be approximately 40 feet wide. This disturbance could be reduced in areas where sensitive resources are determined to be present. Following implementation, these corridors would be revegetated.

2.3.4 Lifts

Lifts proposed within the SUP area would require power lines buried in existing or proposed roads. GTR proposes to build trenches in roads as they are upgraded or constructed to route powerlines to lifts. GTR would use heavy machinery such as an excavator in the summer to dig these trenches as roads are constructed. Utility lines and their locations for each lift project are described below:

- **Dreamcatcher** – Communications and fiber optic lines would be buried in a new trench along the proposed lift line, and electricity would be supplied via an existing line.
- **Crazy Horse** – Electricity would be supplied to the top of the lift in the catwalk from the Dreamcatcher top terminal and to the bottom of the lift from the Dreamcatcher junction box and buried in the PRT. Communication and fiber lines would be buried along the proposed lift line.
- **North Boundary** – Fiber and electrical would be provided to the North Boundary Lift via a line trenched into the proposed road providing access to the bottom terminal. Electrical would also be provided from the top of the Blackfoot Lift to the top terminal of North Boundary, in the proposed road along Blackfoot Traverse. Fiber and communications lines would be buried along the lift line.
- **Shoshone** – Electricity supplied to top and bottom terminals in existing roads to be upgraded.
- **Palmer Platter** – Electricity supplied to top station in existing road to be upgraded.
- **Teaching Carpet** – Electricity supplied via an extension of Dreamcatcher power line.

Since they are not common to all alternatives, a discussion of the Mono Trees and South Bowl proposed utility line plans can be found under **Section 2.2.2**.

Before lift installation, tree removal would be necessary along the proposed lift lines and would follow the practices described in **Section 2.3.1**. To install the lifts, parts would be transported via roads or helicopter where necessary. Construction would occur on-site and would include a spider hoe to dig tower foundations and grade terminal locations. Heavy machinery and blasting would also be utilized for terminals.

2.3.5 On-Mountain Facilities

Proposed on-mountain facilities are located adjacent to existing and proposed roads. Construction materials and machinery would be provided to each facility site via mountain roads. Vegetation removal would not be required in any of the proposed sites. Disturbed areas where permanent infrastructure would not be located would be revegetated to the greatest extent possible. Following NEPA review and approval of proposed projects, design plans for all above ground structures and improvements including infrastructure, facilities, and buildings would be reviewed by the Forest Service responsible official. Structures would follow color and reflectivity guidelines as described in the Built Environment Image Guide.

2.3.6 Multi-Season Recreational Activities

The proposed Summer Activity Zone is located adjacent to Targhee village and is easily accessible via existing mountain roads. Timber removal would be necessary for zip line and fly line activities. Towers for the proposed canopy tours would be accessible via existing roads and construction would most likely be completed over the snow to minimize resource impacts.

2.4 Project Design Criteria

In order to minimize potential resource impacts from construction and implementation of the proposed project, the PDC detailed in **Table 2.4-1** have been incorporated into the Proposed Action. PDC were devised by subject matter experts and Forest Service specialists in the pre-analysis and analysis phases to reduce potential environmental impacts associated with project elements and ensure compliance with laws and regulations. The potential effects of implementing the Proposed Action (disclosed in **Chapter 3**) assume these PDC are applied. PDC come from federal, state, and local laws, regulations, and policies; forest management plans; scientific recommendations; or from experience in implementing similar projects. Specific sources include the *1997 Forest Plan*, the [National BMPs for Water Quality Management on NFS Land](#), and [USDA FS Ski Area BMPs](#), among others. The majority of the PDC provided in **Table 2.4-1** are considered common practices that have been historically used in similar environments, including those that exist at ski areas, to prevent or decrease potential resource impacts.

Table 2.4-1. Project Design Criteria

Resource	Project Design Criteria
General	<p>Prior to starting construction activities on NFS lands, GTR shall develop a Construction Implementation Plan for Forest Service review and authorization. All proposed construction methodologies and practices will be reviewed for compliance with the decision and resource management direction. This plan shall include the following information:</p> <ul style="list-style-type: none"> • Construction Management: Project timelines, project contracts, disturbance boundaries, grading and site plans, staging and parking areas, construction access, and any required survey information. • Timber management: Defined logging deck areas and skid paths, and protocol for timber removal. • Erosion Control and Drainage Management: Erosion control and drainage management activities (refer to the Pre-Construction PDC for watershed resources for additional detail). • Post-Construction Revegetation and Restoration plan: Methodology, locations, vegetative mixes, and soil amendments. • Noxious Weed Management: Weed control methodologies including equipment cleaning, pretreatment, and post-construction monitoring and treatment.

Resource	Project Design Criteria
	<ul style="list-style-type: none"> Best Management Practices (BMPs): Resort BMP list to be employed and adhered to during project implementation. <p>GTR shall obtain all required federal, county, town, and state reviews, approvals, and/or permits prior to the start of construction.</p> <p>Within two years following completion of projects in Rick's Basin and South Bowl, a drainage management plan (DMP) shall be created by GTR and approved by the Forest Service to address the potential for erosion and soil movement in these two areas that may result from ground disturbance associated with the proposed action. The DMP shall identify and prioritize problematic locations needing remediation. Potential measures include improvement of existing drainage infrastructure such as road-side ditches and culverts, construction of new drainage features, and enhanced revegetation. The DMP shall be updated every five years to address completed remediation projects and to include newly identified issues.</p>
Recreation	<p>All improvement projects will follow Forest Service accessibility guidelines as outlined by the Forest Service Outdoor Recreation Accessibility Guidelines, Forest Service Accessibility Guidelines for Ski Resorts, and Forest Service Trail Accessibility Guidelines.</p> <p>Where appropriate, fencing, flagging, signage and other safety mechanisms shall be used to alert winter and summer visitors to the location of activities and infrastructure.</p> <p>Unauthorized biking and hiking trails developed by third parties shall be promptly deconstructed and reclaimed as they are discovered.</p> <p>All mountain biking and hiking trails shall have appropriate signage to direct uphill and downhill traffic and prevent user conflict, this will be specified in future operating plans.</p>
	<p>GTR will develop an Operations and Boundary Plan to guide users exiting from the permit boundary to the adjacent backcountry terrain through logical and safe exit points. This plan should describe both physical closures and operational measures to be taken. Prior to implementation of any activities authorized by this decision, this plan shall be reviewed by the Forest Service. This plan will be finalized and incorporated into the operating plan prior to the operation of lift served terrain in South Bowl and Mono Trees.</p>
Scenery	<p>Construct structures and lift components with materials which blend with the landscape character, as is practicable, and meet FSM 2380 policy for color and reflectivity, which is 4.5 on the Munsell neutral value color scale. Building designs will be submitted to the Forest Service for review and approval.</p> <p>Follow FSM guidelines (Section 2380) and BEIG guidelines:</p> <ul style="list-style-type: none"> The scenic character will be protected through appropriate siting of buildings and the use of low-impact materials and colors (e.g., indigenous construction materials, such as stone and wood, as well as low-reflective glass and roofing materials). Remain in context with the landscape (i.e., rustic, craftsman, and country lodge styles). Architecture, materials, and colors should follow the Forest Service's BEIG. Additionally, FSH No. 617, "National Forest Landscape Management for Ski Areas, Volume 2, Chapter 7," refers recommended colors for ski areas on page 37 of that handbook. The colors are darker colors; greens, browns, navy blue, grays and black. <p>Large buildings or facilities on the ridge in view of the GTNP should have earthen roof. Windows on facilities on ridge shall have anti-reflective treatment, coating, or integral windows. Lift terminals shall have natural/neutral colors with anti reflectant materials. All facilities will have design review by CTNF authorized representative.</p> <p>Avoid straight edges where removing trees. The edges of lift-lines, trails, glades, and structures, where the vegetation is removed, need to use a variable density cutting (feathering) technique applied to create a more natural edge that blends into the existing vegetation. Edges should be non-linear, and changes in tree heights along the edges of openings should be gradual rather than abrupt. Soften hard edges by selective removal of trees of different ages and heights to produce irregular corridor edges where possible.</p>

Resource	Project Design Criteria
	<p>Cut stumps as low as possible to the ground to avoid safety hazard and to meet scenery objectives.</p> <p>Regrade disturbed areas to restore a natural terrain appearance, as feasible. Blend site grading disturbance into the existing topography to achieve a natural appearance and minimize cuts and fills at the transition with proposed grading and existing terrain. Side casting of roads should be limited. Cut material should be filled in on the downslope side of the road consistent with Soils PDC, to provide a more natural appearing surface.</p> <p>Promptly revegetate all disturbed areas after the site has been satisfactorily prepared. Repeat seeding until satisfactory re-vegetation is accomplished. Seed with a native seed mixture using a variety of native seed grasses, wildflowers and forbs.</p> <p>To meet solar reflectivity standards and minimize visual impacts associated with reflectivity from installed infrastructure, the facility shall be built with design elements that break up form, line, and texture to minimize reflectivity. This includes any reflective surfaces (metal, glass, plastics, or other materials with smooth surfaces), that do not blend with the natural environment. They shall be covered, painted, stained, chemically treated, etched, sandblasted, corrugated, or otherwise treated to meet the solar reflectivity standards. The colors shall be muted, subdued colors because they blend well with the natural color scheme. Surface textures shall be increased or made coarser and recessed windows shall be used to reduce exposure to the sun and limit reflectivity. The specific requirements for reflectivity are as follows: reflective surfaces on the proposed Fred's Mountain Top Guest Facility will be painted with earth tones and natural colors or with dark non-reflective colors that blend with the forest background to meet an average neutral value of 4.5 or less as measured on the Munsell neutral scale.</p> <p>Where ski trails will be fully cleared of vegetation, trail edges shall be feathered or scalloped to provide a variable line, thereby minimizing linear cuts in overstory vegetation. Larger inter-trail tree islands shall be maintained to minimize the impact of cleared trails. Trees shall be retained, where possible, to provide species and size diversity, maintain forest cover, and screen facilities.</p> <p>Utilities shall be buried as per 1997 Forest Plan standard. To reduce visual effects and disturbance use the smallest machinery possible (stinger or smallest excavator bucket width).</p> <p>Facilities, including trails and signs, shall meet Forest Service Accessibility Guidelines.</p> <p>Nighttime use of Fred's Mountain Top Guest Facility is not included in the Action Alternatives. Closure of this facility shall be required no later than an hour past NOAA's listed sunset time. Future nighttime use of this facility shall be subject to additional NEPA review and cannot be permitted via changes in the operating plan.</p>
Cultural Resources	<p>Site-specific surveys have been conducted. If undocumented historic and/or prehistoric properties are located during ground disturbing activities or planning activities associated with approved construction activities, address as specified in 36 CFR § 800.11 concerning Properties Discovered During Implementation of an Undertaking.</p> <p>If there are resources determined eligible to the NRHP, the CTNF will consult with the State Historic Preservation Officer (SHPO) and Tribal entities regarding mitigation of adverse effects to historic properties as outlined in 36 CFR 800.4 and 36 CFR 800.5.</p> <p>Prior to implementation of the Mill Creek access road and ski way, test cultural site 48TE2171, a prehistoric chipped stone scatter near Mill Creek to better assess the depositional context and whether there are additional buried cultural materials in the area.</p>
Air Quality	<p>To the extent feasible, promptly install site improvements and rehabilitate the site to reduce the potential for dust emissions. Minimize creation of dust when using mechanical equipment (heavy equipment and vehicles).</p> <p>Keep the area disturbed by clearing, earth moving, or excavation activities to a minimum at all times, allowing improvements to be implemented in sections.</p>

Resource	Project Design Criteria
	Water, as necessary and practicable, grading areas, including lift terminal areas and busy construction routes, to prevent excessive amounts of dust. In the absence of natural precipitation, watering of these areas should occur, as practicable.
Vegetation	Before implementing any approved project activities not included in the botanical survey area, the specific project areas shall be surveyed using established protocol. Surveys shall be conducted for threatened, endangered, proposed and candidate species, Region 4 sensitive species, Species of Local Concern (SOLC), and species of viability concern (SVC).
	If any previously undocumented or unknown occurrences of threatened, endangered, proposed, or sensitive plants are encountered within the project area prior to or during project implementation, the CTNF shall be notified. CTNF shall develop suitable mitigation measures to ensure there is no loss of viability of the species within the planning area.
	Construction practices and operations should avoid impacting native plant communities through designation of formal access paths in heavy use areas and other appropriate means.
	Manage disturbed areas to maintain enough ground cover to prevent increased runoff and erosion. Ground cover, as a combination of revegetation, woody debris, fine organic matter, surface rocks, and mulch, will be 70 percent of natural background cover following reclamation activities to minimize erosion. Revegetation success and ground cover effectiveness shall be determined in consultation with the Forest Service resource specialists.
	For projects that involve logging operations, ground skidding shall be avoided on slopes steeper than 40 percent.
	<p>Explore options for bio-energy (removal) and biochar (on-site) for slash disposal as feasible (Source: https://www.fs.usda.gov/treesearch/pubs/53830). If slash disposal is conducted by pile and burn, implement the following PDC to minimize impacts:</p> <ul style="list-style-type: none"> • If possible, conduct pile burning over a protective layer of packed snow and/or frozen ground. • Construct slash piles to minimize soil impacts by leaving the bottom two lifts of logs open. • Manage burn piles to create biochar for use in revegetation efforts. <p>If snow/frozen ground is not present at the time of pile burning, soil organic matter and topsoil should be scraped and stockpiled prior to pile construction and re-spread after pile burning; and till/scarify after burning to promote recovery by breaking up water repellent layers, increasing water infiltration, and mixing in organic material.</p>
	<p>If chipping or mastication is determined to be used for slash disposal, implement the following PDC to minimize impacts:</p> <ul style="list-style-type: none"> • Spread out wood chips to a depth not to exceed 3 inches. • Distribute chips in discontinuous patches that do not result in a continuous chip mat (<40 percent of surface covered by 3 inches of chips). • Do not bury or mix the chips in with the soil.
	If slash is to be lopped and scattered, depth shall not exceed 24 inches.
	<p>GTR will revegetate disturbed areas to attain ground cover densities that shall control erosion and prevent sedimentation consistent with 1997 Forest Plan Guidelines (page III6-7). Prior to ground-disturbing activities, GTR must submit for review a Post-Construction Revegetation and Rehabilitation Plan. The plan will contain:</p> <ul style="list-style-type: none"> • A list of materials to be used for site stabilization and revegetation (i.e., soil amendments, seed mixes, erosion control products). Seed mixtures and mulches will be certified to be free of noxious weeds and must be approved by the Forest Service botanist or other Forest Service qualified personnel prior to purchase. Seed test results for each seed lot will be made available to the Forest Service prior to purchase. To prevent soil erosion, non-persistent, non-native perennials or sterile perennials may be used while native perennials become established.

Resource	Project Design Criteria
	<ul style="list-style-type: none"> • Revegetation techniques including the proposed timing and method of application for seed, mulches, and erosion control products. • A monitoring protocol for vegetative cover standards that shall be implemented for a minimum of three years following seeding. Monitoring shall document the plant species present, their likely origin (i.e., seed mix, colonizer, residual), the presence of invasive non-native plants and noxious weeds, and any problems with erosion or sedimentation. Recommendations for site improvements, if necessary, shall also be provided. Monitoring protocol shall be established in conversations with the Forest Service Botanist.
	<p>Treatment of existing noxious weed infestations (those documented in the Noxious Weed Risk Assessment report and others that may be discovered) with approved herbicides within the project area shall be conducted prior to project implementation. Herbicide choices and application rates for treatment are available from the District/Forest Weed Program Manager.</p>
	<p>To minimize risk of noxious weed introduction and spread, require all equipment used for ground-disturbing activities (not including service trucks or other vehicles that remain on roadways) to be clean, i.e., free of mud, dirt, plant parts, and seeds, or other debris that could contain or hold plant parts or seeds, prior to entering the project area, and prior to leaving a weed-infested project area. Equipment will be considered free of soil and other debris when a visual inspection does not disclose such material. The Forest Service reserves the right to inspect equipment prior to equipment staging or use on NFS lands. Closely monitor all equipment cleaning areas for weed establishment.</p>
	<p>As it relates to construction, minimize travel through weed-infested areas or restrict travel to periods when seed spread is least likely. Treat noxious weeds along travel routes prior to and during project construction. Travel routes include ski area access roads, not county-administered roads.</p>
	<p>Locate staging areas, stockpiles, and logging decks and burn piles away from weed infested areas. Monitor and control new weeds in staging areas and stockpiles.</p>
	<p>Use only gravel, fill, sand, and rock that are judged to be weed free by the State, North American Weed Free Program, or Forest weed specialists.</p>
	<p>Amend the Special Use Permit to require on-going monitoring and treatment of invasive plants in the Project Area. This can be accomplished through the development and incorporation of a supplemental clause such as the following, recommended in Appendix 2 of the 2001 U.S. Forest Service Guide to Noxious Weed Prevention Practices.</p> <p><i>"The holder shall be responsible for the prevention and control of noxious weeds and/or exotic plants of concern on the area authorized by this authorization and shall provide prevention and control measures prescribed by the Forest Service. Noxious weeds and exotic plants of concern are defined as those species recognized by Teton County and/or Caribou-Targhee National Forest, in which the authorized use is located. The holder shall also be responsible for prevention and control of noxious weed and exotic plant infestations which are not within the authorized area, but which are determined by the Forest Service to have originated within the authorized area. When determined to be necessary by the authorized officer, the holder shall develop a site-specific plan for noxious weed and exotic plant prevention and control. Such plan shall be subject to Forest Service approval. Upon Forest Service approval, the noxious weed and exotic plant prevention and control plan shall become a part of this authorization, and its provisions shall be enforceable under the terms of this authorization."</i></p>
	<p>Prior to construction, establish a Grand Targhee Resort Weed Prevention and Management Program that applies to the entire SUP area, existing and expanded. The plan must be approved by the Forest Service. Ensure the plan includes sections on:</p> <ol style="list-style-type: none"> 1. Prevention: Proactive approaches to reduce the spread of weeds, including: conduct ground-disturbing activities only if previously approved by the Forest Service and necessary for public safety or Resort function, minimize ground disturbance when conducting such activities, design public-use facilities to reduce accidental spread of invasive species, and educate and raise awareness with internal and external audiences about the threat of invasive weeds. 2. Early Detection and Rapid Response (EDRR): Carry out regular detection surveys and record the locations of weeds throughout the Resort. Require at least one annual survey of all wetlands, roads, buildings, revegetated areas, chairlift terminals, and base area. Survey all trails once every three years. The intent is to quickly detect invasive species infestations, and subsequently implement immediate and specific actions to eradicate those infestations before they become established and/or spread. Ensure plan is consistent

Resource	Project Design Criteria
	<p>with guidance from the National Invasive Species Council, such as the 'Guidelines for Early Detection and Rapid Response'.</p> <ol style="list-style-type: none"> 3. Control & Management: Conduct integrated weed management activities to contain, reduce, and remove established weed infestations. Consider high-use summer recreation and maintenance areas such as the base area, roads, summer-operating chairlift terminals, and trails as high priority for weed control. Follow all design criteria listed in Section 2.4 and BMPs in Appendix E-F from the Caribou-Targhee Forest-wide 2021 Integrated Weed Management Plan FEIS, and follow all relevant BMPs from the 2012 National Best Management Practices for Water Quality Management on National Forest System Lands. 4. Restoration: Where necessary, implement restoration, rehabilitation, and/or revegetation activities following invasive species treatments to prevent or reduce the likelihood of the reoccurrence or spread. Use native species in revegetation efforts.
	<p>When applying chemical herbicide near wetlands or streams, follow label restrictions and all relevant BMPs from the National Best Management Practices for Water Quality Management on National Forest System Lands (USDA Forest Service 2012).</p>
	<p>Project activities should be designed to avoid and minimize impacts to sensitive plant species to the most practicable extent possible. Flag sensitive plant locations and erect visual barriers to aid construction personnel in avoidance.</p>
	<p>Before ground-disturbing activities begin, identify and locate all equipment staging areas on NFS lands. Locate and use weed-free project staging areas. When this is not possible, treat existing noxious weeds in these areas prior to the staging of any equipment, or relocate staging areas if deemed necessary by the Forest Service.</p>
	<p>Prior to project implementation WBP management guidelines will be included in an updated Vegetation Plan as required to be part of the Special Use Permit for Grand Targhee Resort. The Vegetation Plan will reference the Standing Analysis for Effects to Whitebark Pine (<i>Pinus albicaulis</i>) from Low Effect Projects and Whitebark Pine Restoration and Recovery Activities within Montana and Wyoming (https://www.fws.gov/sites/default/files/documents/20230117_WBP_FWS_StandingAnalysisWBP_and_CoverMemo_Final_Signed.pdf)</p>
	<p>During tree removal for new disturbances (e.g., runs and trails), selectively retain 5 needle pine and instead remove alternate tree species. Retain tree islands of WBP in proposed ski runs, particularly at higher elevations to increase visibility during low visibility conditions and help minimize loss of WBP. If not practicable, mature 5 needle pine removal will be approved by the Forest Service after site-specific review. Maintenance of existing runs (mowing) is allowed to continue as it has in the past. Any grading maintenance will select for species other than WBP.</p>
	<p>When marking is deemed appropriate by Forest Service or construction personnel, WBP trees will be marked in a manner that does not cause damage to the tree or introduce disease.</p>
	<p>Limit motorized travel (including using over snow vehicles in thin snowpack) in WBP habitat to designated roads, cat tracks, and groomed trails.</p>
	<p>Whitebark pine Plus Trees will be preserved and protected from project impacts.</p> <ul style="list-style-type: none"> • Coordinates for the three Plus Trees that are present in the project area will be used to locate the trees and trees will be sufficiently flagged/marked to ensure preservation. • Erosion control and revegetation around Plus Trees will be implemented following disturbance to ensure the viability of each tree. • Damage or removal of plus trees will only occur in natural situations or where human health and safety are at risk and will be approved by the Forest Service after a site-specific visit. Pruning may only occur for the purpose of restoration and under Forest Service direction.
	<p>Whitebark pine plus trees have been clearly labeled and labels will be maintained by Forest Service personnel to ensure ground disturbance from the use of mechanical equipment will not occur within 10 meters.</p>

Resource	Project Design Criteria
	<p>Educate resort employees about WBP ecology, importance, protection, and recovery prior to implementing projects in WBP habitat. Train Grand Targhee Resort maintenance personnel annually to identify 5-needle pines and to avoid impacting adult 5-needle pines during trail maintenance activities.</p> <p>Prior to development in areas with known or suspected whitebark pine cover, pre-construction surveys will be conducted to map the approximate areas and densities of whitebark pine trees to be impacted. Information from pre-construction surveys will be used to help avoid impacting or removing whitebark pine trees when practicable and ensure impacts are accurately quantified.</p> <p>Annually train project construction personnel to identify 5-needle pines and to avoid removal of 5-needles pines when practicable (i.e., during thinning when alternate species can be removed instead or when retaining WBP doesn't impair approved development) to minimize impacts to WBP and ensure that project activities do not result in more adverse effects than described in the project impacts analysis.</p> <p>Trail and other infrastructure maintenance activities should avoid removing mature WBP trees and focus on pruning trees to acceptable heights to maintain cone bearing branches and allow for continued seed production.</p> <p>Do not use live WBP trees as trail markers.</p> <p>Obtain Whitebark Pine Friendly Ski Area Certification from the Whitebark Pine Ecosystem Foundation prior to project implementation. Certification requirements include implementation of a whitebark pine education program, developing a conservation plan that includes mitigation for impacted whitebark pine, and implementing a monitoring program to assess population status and conservation success.</p> <p>Before ground-disturbing activities begin, identify and locate all equipment staging areas on NFS lands. Locate and use weed-free project staging areas. When this is not possible, treat existing noxious weeds in these areas prior to the staging of any equipment, or relocate staging areas if deemed necessary by the Forest Service.</p>
Wildlife and Fish	<p><i>To reduce the potential of human/bear conflicts, food products; containers; and bear attractants shall be disposed of in self-locking, certified bear resistant containers or dumpsters approved by the Interagency Grizzly Bear Committee (general timeline is from March 1 to December 1). Trash receptacles at construction sites that include food related waste or bear attractants will be bear-resistant. Food and drink shall be stored in construction vehicles or bearproof containers. All vehicular windows shall be kept closed and doors locked to prevent bear entry. Resort BMPs employed upon implementation shall ensure proper storage/disposal of bear attractants including attractants associated with food and drink services which shall be stored inside bear-resistant buildings. (In accordance with Order Number 04-15-23-117)</i></p> <p>Artificial lighting shall be minimized. All artificial lighting shall be shielded and angled downward to minimize impacts to nocturnal species.</p> <p>Appropriate signage and informational materials shall be posted to reduce the risk for human/wildlife conflicts (e.g., bear-proof food storage).</p> <p>To the extent possible markers or flagging shall be installed and maintained on zip line infrastructure to reduce the likelihood of bird strikes.</p> <p>GTR will place decals or other deterrents on windows, as Forest Service personnel deem appropriate, to reduce the likelihood of bird strikes. Decals and deterrents will be present year-round.</p> <p>Riparian areas that experience any loss of vegetation (resulting from construction activities) will be re-vegetated immediately after construction with native vegetation, willow cuttings, and/or native, certified, weed free seed.</p> <p>If a grizzly bear den is found within the current Grand Targhee Resort boundary or proposed expansion area, either during construction or implementation, coordination with the Forest Service wildlife biologist shall occur to ensure that activities shall not impact the survival of the denning bear.</p>

Resource	Project Design Criteria
	<p>If construction/vegetation clearing activities must occur during the golden eagle nesting period, which is considered from March 1 to August 15, U.S. Forest Service personnel (or individuals deemed qualified by the Forest Service) will conduct nest searches in appropriate habitats prior to the commencement of the construction/vegetation clearing activities. The exact area to be surveyed will be based on the scope of the disturbance activities and the habitat to be disturbed. If nesting golden eagles occur, the Forest Service will delineate appropriate buffers and halt construction within the buffers until the nesting is complete.</p>
	<p>Contractors, construction workers, and resort employees will be annually trained in bear safety including use of bear spray. Training in grizzly bear identification will also be provided and a system for documenting grizzly bear observations and conflicts should be implemented.</p>
	<p>If golden eagle nesting occurs within or adjacent to the project area during the life of the permit, coordination will occur with Forest Service and U.S. Fish and Wildlife biologists to ensure that ongoing recreation activities directly associated with the Resort would not result in take.</p>
	<p>Project personnel will keep bear spray accessible when they are working in the Project Area from April 1 to November 15.</p>
	<p>If any threatened, endangered, and Region 4 sensitive species and/or their habitats, including nests, not analyzed in this EIS, are identified during project implementation or project operations, actions in the immediate vicinity will be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts.</p>
	<p>Vegetation clearing activities are generally planned to occur outside of the migratory bird nesting period, which is typically from May 15 to July 15. If vegetation clearing activities must occur during the nesting period, U.S. Forest Service personnel (or individuals deemed qualified by the Forest Service) will conduct nest searches in appropriate habitats prior to the commencement of the vegetation clearing activities. The exact area to be surveyed will be based on the scope of the surface disturbance activities, the habitat to be disturbed, and the potential species to be impacted. If nesting migratory birds occur, the Forest Service will delineate appropriate buffers and halt construction within the buffers until the nesting is complete.</p>
	<p>To reduce the likelihood of disturbance to/fatalities of individual American goshawks, no vegetation clearing/construction activities associated with the action alternatives shall occur within the American goshawk designated 200-acre nest area from April 1 to August 15.</p>
	<p>To prevent disturbance to/fatalities of individual boreal owls, no vegetation clearing/construction activities associated with the action alternatives shall occur within the boreal owl designated 30-acre territories from March 1 to August 15.</p>
	<p>Tree clearing for construction of a proposed segment of summer trail along the western extent of the existing SUP area within the designated American goshawk post fledging area shall only occur between October and February.</p>
	<p>To prevent disturbance to/fatalities of individual flammulated owls, no vegetation clearing/construction activities associated with the action alternatives shall occur within the flammulated owl designated 30-acre territories from May 1 to August 15.</p>
	<p>Where practicable and deemed safe, snags will be left in place to preserve existing biological potential and habitat for woodpeckers, American goshawks, and other species.</p>
	<p>Where practicable and deemed safe, woody debris will be left in place to preserve existing logs in size classes 1, 2 and 3. If logs are to be left consult with forest timber personnel to ensure material isn't left in a manner that will encourage harmful insect infestation.</p>
	<p>If an active wolverine den is found within the project area (either during construction or operations), coordination with the Forest Service biologist will occur to ensure that appropriate protections (e.g., buffers) are put in place.</p>

Resource	Project Design Criteria
	Construction workers will not have dogs on site to prevent potential harassment of wildlife.
Soils, Geohydrology, Hydrology, and Wetlands	<p>Locate and design roads to avoid or minimize adverse effects to soil, water quality, and riparian resources. Locate roads to fit the terrain and limit the need for excavation. Locate roads on stable geology with well-drained soils. Avoid hydric soils, inner gorges, overly steep slopes, and unstable landforms to the extent practicable. Locate roads as far from waterbodies as practicable, with a minimum number of crossings and connections between the road and the waterbody. Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, and fens, to the extent practicable. Provide a buffer of suitable width between the road and a waterbody to maintain desired conditions, goals, and objectives of the aquatic influence zone (AIZ).</p> <p>As necessary reference National BMPs for NFS lands. Specifically, Road-2. Road Location and Design, Road-3. Road Construction and Reconstruction, Road-4. Road Operations and Maintenance, Road-7. Stream Crossings, and Road-8. Snow Removal and Storage (https://www.fs.usda.gov/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf)</p>
	<p>Avoid or minimize adverse effects to soil, water quality, and riparian resources during the construction, operation, and maintenance of ski runs and lifts. Locate ski runs and lifts on stable geology and soils to minimize risk of slope failures. Avoid wetlands and riparian areas when locating ski runs and lifts wherever practicable. Incorporate suitable measures in the design and construction of ski runs, including consideration of runoff of additional water from snowmaking, to avoid or minimize undesirable increases in runoff. Maintain desired ground cover. Site specific plans will be approved by forest personnel prior to implementation and the Forest Service Soils and/or Hydrologist should be consulted where projects overlap these resources. Revegetation success will be monitored in the seasons following implementation, with adjustments being made as necessary.</p> <p>As necessary reference National BMPs for NFS lands. Specifically Rec-10. Ski Runs and Lifts: https://www.fs.usda.gov/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf</p>
	<p>Avoid or minimize adverse effects to soil, water quality, and riparian resources at all stages of the snowmaking process. Manage snowmaking and snow farming to avoid or minimize slope failures and gully erosion on the hillslopes and excessive bank erosion and sediment in receiving streams. Limit snowmaking on graded terrain to the extent practicable to minimize surface runoff and subsequent erosion from reduced infiltration capacity. Transport water to the forested slopes in the least disruptive manner. Design snowmaking systems to return runoff water to the source from which it was removed. Avoid inter-basin transfer of waters, where practicable, to maintain original duration, magnitude, and patterns of runoff in affected watersheds. Avoid contaminating return water with chemicals or other pollutants. Monitor all aspects of the process and correct problems as they occur to avoid or minimize long-term effects. Regularly inspect snowmaking lines and equipment to prevent accidental discharges and erosion due to equipment failure.</p>
	<p>During construction and maintenance, stockpile topsoil and organic matter separate from subsoil to the extent possible for redistribution, stabilization, and rehabilitation of the site after construction.</p>
	<p>Prior to construction, soil surveys and measurements of thicknesses of A or organic horizons shall be completed within the disturbance area to ensure no net loss of soil organic matter. GTR shall hire a qualified soil scientist to complete soil surveys and measurements. Reports will be submitted as specified in the Construction Plan.</p>
	<p>Prior to implementation, GTR shall submit grading plans for (1) projects greater than 1 acre, and (2) all new temporary and permanent paths/roads for agency review and authorization.</p>
	<p>Prior to construction, a detailed site erosion control plan shall be submitted for agency review and authorization. This plan shall include the following components:</p> <ul style="list-style-type: none"> • Silt fences, straw bales/wattles, ground cover or mulching measures, or sediment control BMPs to contain sediment on-site. • Jute-netting or appropriate erosion-control matting on steep fill slopes (areas with a slope angle of 35 percent or greater) to protect soils and enhance vegetation re-establishment • Prompt revegetation of disturbed areas • Minimize hillslope runoff to extent practicable.

Resource	Project Design Criteria
	<ul style="list-style-type: none"> • Salvage top soil and organic matter for use and reclamation after disturbances. • Defined grading limits and physical barriers along the perimeter of graded areas.
	<p>Employ a BMP program to protect public water systems (PWSs) that have source water areas located within the permit area. The first BMP approach is to avoid sensitive areas or highly erosive soils to the extent practicable; Next, proven hillslope/land BMPs will be applied to minimize runoff, erosion, and sediment delivery to streams. Lastly, Sediment detention and water settling ponds shall be constructed to minimize runoff and sediment delivery off site towards downstream resources.</p> <p>Sensitive areas include the Aquatic Influence Zone (AIZ) near streams or other water features.</p> <p>Involve the PWS managers in the planning and project design.</p>
	<p>Roads, trails, or other disturbed areas should not be located on slopes that show signs of instability, such as slope failure, mass movement, or slumps.</p> <p>1997 Targhee Forest Plan Soil & Water guidelines for Management Prescription 4.2 – <i>Special Use Permit Recreation Sites</i>: Avoid new construction on unstable or highly erosive soils</p>
	<p>For projects that increase road traffic or require road use by heavy construction equipment, road surfacing should be applied near stream/drainage crossings as needed to harden the road surface and minimize sediment delivery.</p>
	<p>A site visit and field-fitting of planned projects, paths and roads shall occur by forest personnel before construction may begin.</p>
	<p>Any site grading should blend disturbance areas into the existing topography to achieve a natural appearance.. Side casting of roads should be limited. In the event side casting is needed, cut material should be filled in on the downslope side of the road to provide a more natural appearing surface.</p>
	<p>Prepare detailed site plans for concentrated use sites. Design sites to be resilient to increased foot traffic and other intended uses. Incorporate existing soils and native vegetation into site plans.</p>
	<p>Reclaim disturbed areas promptly when use ends to prevent resource damage and invasion of noxious weeds. Ensure proper drainage, rip compacted areas, and apply a Forest Service-approved seed mix and fertilizer to facilitate revegetation, plus mulch if needed.</p>
	<p>Use existing roads unless other options will produce less long-term sediment. Relocate existing routes or segments that are causing, or have the potential to cause, adverse effects to soil, water quality, and riparian resources, to the extent practicable. Obliterate the existing road or segment after the relocated section is completed.</p>
	<p>In all areas where grading or soil disturbance will occur, a reassessment of the quantity (depths) of soil A and/or organic ground cover shall be made to ensure no net loss of this material. Reports will be submitted as specified in the Construction Plan.</p>
	<p>Soil-disturbing activities will be avoided during periods of rain or wet soils. Heavy equipment may be operated within unit boundaries only when soil moisture is below the plastic limit, or protected by at least 1 foot of packed snow or 6 inches of frozen soil. Rutting caused by equipment operation should not exceed six to eight inches in depth (wet condition) over more than ten percent of the operating area. No equipment operations should take place when ground conditions are wet enough that there is a risk of such rutting (for logging operations – reference the 1997 Forest Plan as necessary (page III-33).</p>
	<p>Areas determined to have been compacted by construction activities may require mechanical subsoiling or scarification to the compacted depth to reduce bulk density and restore porosity.</p>
	<p>Ground cover, as a combination of revegetation, organic amendments and mulch applications, will restore depths of soil A and/or organic ground cover.</p>

Resource	Project Design Criteria
	Install cross drains on roads to disperse runoff into filter strips.
	Install drain dips or grade reversals on mountain biking trails, especially near stream/drainage crossings.
	To protect slope stability in the vicinity of intermediate and advanced-level trails, trails will be constructed so that the distance between drainage diversion outfalls (such as rolling dips or culverts), does not become longer than 50 to 100 feet.
	If logging over the snow, snow depth should be a minimum of 1 foot, continuously packed (i.e., not patchy) and sufficient enough to prevent vehicles from breaking through. If logging over frozen ground, a minimum of 6 inches of continuous frozen ground should be present to prevent/minimize soil disturbance.
	During site preparation treatments, avoid disturbing concentrated areas of soil wood to the greatest degree feasible.
	Runoff from roads should drain through a filter such as a vegetated buffer strip, slash windrow, silt fence, or detention basin.
	<p>Avoid or minimize adverse effects to soil, water quality, and riparian resources when constructing, reconstructing, or maintaining waterbody crossings. Examples of crossings include culverts, bridges, arched pipes, low-water crossings, vented fords, and permeable fills. Crossing materials and construction will vary based on the type of access required, duration of need, and volume of use expected. Crossings should be designed and installed to provide for flow of water, bedload, and large woody debris, desired aquatic organism passage, and to minimize disturbance to the surface and shallow groundwater resources. Proper sizing will be directed by BMPs on NFS lands, Road-7. Stream Crossings:</p> <p>https://www.fs.usda.gov/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf</p>
	<p>Locate roads as far from waterbodies as is practicable to achieve access objectives, with a minimum number of crossings and connections between the road and the waterbody. Consider the following criteria:</p> <ul style="list-style-type: none"> • Avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, and fens, to the extent practicable. • Provide an AIZ of suitable width between the road and a waterbody to maintain desired conditions, goals, and objectives for structure, function, and processes of the AIZ and associated waterbody when a road must parallel a waterbody. • Locate stream crossings where the channel is narrow, straight, and uniform, and has stable soils and relatively flat terrain to the extent practicable. • Design the crossing to pass a normal range of flows for the site. <p>As necessary reference BMPs on NFS lands, Road-7. Stream Crossings for additional clarifications:</p> <p>https://www.fs.usda.gov/naturalresources/watershed/pubs/FS_National_Core_BMPs_April2012.pdf</p>
	<p>Design the road surface drainage system to intercept, collect, and remove water from the road surface and surrounding slopes in a manner that minimizes concentrated flow in ditches, culverts, and over fill slopes and road surfaces. Design considerations include:</p> <ul style="list-style-type: none"> • Using structural or nonstructural measures suitable to the road materials, road gradient, and expected traffic levels. • Using an interval between drainage features that is suitable for the road gradient, surface material, and climate. • Using suitable measures to avoid or minimize erosion and sedimentation of ditches.
	<p>To decommission unnecessary road and trail segments, implement suitable measures to re-establish stable slope contours and surface and subsurface hydrologic pathways where necessary to the extent practicable to avoid or minimize adverse effects to soil, water quality, and riparian resources. These measures include:</p> <ul style="list-style-type: none"> • Removing drainage structures. • Recontouring and stabilizing cut slopes and fill material. • Reshaping the channel and streambanks at crossing sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site.

Resource	Project Design Criteria
	<ul style="list-style-type: none"> Restoring or replacing streambed materials to a particle size distribution suitable for the site. Restoring floodplain function. <p>As necessary, reference the AIZ direction contained within the 1997 Forest Plan (Page III-110).</p>
	Implement suitable measures to promote infiltration of runoff and intercepted flow and desired vegetation growth on the road and trail prism and other compacted areas.
	Use suitable measures to avoid or minimize scour and erosion of stream channels, and crossing structures and foundations, to maintain the stability of the channel and banks.
	Locate or relocate trails to conform to the terrain, provide suitable drainage, provide adequate pollutant filtering between the trail and nearby waterbodies, and reduce potential adverse effects to soil, water quality, or riparian resources.
	Install and maintain suitable drainage measures to collect and disperse runoff and avoid or minimize erosion of trail surface and adjacent areas.
	Minimize grading or recontouring of hill slopes to maintain intact soil horizons and infiltrative properties.
	Cut stumps flush with soil surface or grind in place instead of grubbing when clearing trees from ski runs wherever practicable.
	To protect hydrologic resources, locate burn piles outside the AIZ.
	Use suitable measures to direct overland flow on slopes into areas with intact soil horizons and sufficient vegetation to encourage infiltration and disconnect overland flow from waterbodies.
	Monitor revegetation response (height, root growth, ground coverage, etc.) in terms of its capacity to avoid or minimize erosion during runoff. Perform additional revegetation or erosion control as needed to protect water quality and soil integrity.
	Construction practices and operations should not introduce soils, debris, or other pollutants into streams, channels, swales, lakes, or wetlands. BMPs adequate for erosion and sediment control should be installed before ground-disturbing activities begin. If natural or biodegradable materials are not used and left on site, all non-natural and non-biodegradable materials should be removed at the end of construction.
	Excavated material should not be stored in the AIZ.
	Tree removal, excavation and grading should be minimized in the AIZ.
	As required, obtain all federal, state, and local permits when installing stream and wetland crossings and ensure they meet permit requirements
	Locate and construct log landings in such a way to minimize the amount of excavation needed and to reduce the potential for soil erosion. Design landings to have proper drainage. After use, treat landings to disperse runoff and prevent surface erosion and encourage revegetation.
	For ground-disturbing activities near perennial and intermittent streams and ephemeral draws, connected disturbed areas (CDA) should be minimized by draining roads, road ditches, and other disturbed areas to undisturbed soils or vegetation rather than directly to streams and ephemeral draws. Drainage from disturbed areas should be modified as necessary using natural topography, rolling dips, waterbars, ditch-relief culverts, etc., to disconnect disturbed areas from streams.
	Vegetative buffers should be maintained adjacent to intermittent or perennial drainages and wetlands as well as within the AIZ. Where avoidance of the vegetative buffer is not possible, disturbance should be minimized.

Resource	Project Design Criteria
	<p>Culverts should not be installed and ground-disturbing activities should not be conducted near streams during spring runoff, or during periods of heavy precipitation.</p>
	<p>Rocks, wood, or other material should not be added or moved in streams or lakes except if these actions maintain or improve stream health. Stream bed and banks should not be altered.</p>
	<p>Hiking and biking trails should not be routed directly down the fall line. Drainage structures should be located above steep stretches of trail to minimize the amount of water that gets routed onto steep slopes. Steep areas should have a higher frequency of drainage features.</p> <p>Avoid or minimize adverse effects to soil, water quality, and riparian resources by controlling soil erosion, erosion of trail surface materials, and water quality problems originating from construction, maintenance, and use of trails.</p> <p>Locate or relocate trails to conform to the terrain, provide suitable drainage, provide adequate pollutant filtering between the trail and nearby waterbodies, and reduce potential adverse effects to soil, water quality, or riparian resources.</p> <ul style="list-style-type: none"> • Avoid sensitive areas, such as riparian areas, wetlands, stream crossings, inner gorges, and unstable areas to the extent practicable. • Use suitable measures to mitigate trail impacts to the extent practicable where sensitive areas are unavoidable. • Use suitable measures to hydrologically disconnect trails from waterbodies to the extent practicable. <p>Design, construct, and maintain trail width, grades, curves, and switchbacks suitable to the terrain and designated use.</p>
	<p>Hiking and biking trails should not be routed down the bottom of ephemeral draws or other low spots to facilitate drainage.</p> <p>Install and maintain suitable drainage measures to collect and disperse runoff and avoid or minimize erosion of trail surface and adjacent areas.</p> <p>Use and maintain surfacing materials suitable to the trail site and use to withstand traffic and minimize runoff and erosion.</p> <ul style="list-style-type: none"> • Pay particular attention to areas where high wheel slip (curves, acceleration, and braking) during motorized use generates loose soil material. • Designate season of use to avoid periods when trail surfaces are particularly prone to unacceptable erosion, rutting, or compaction. • Designate class of vehicle and type of nonmotorized uses (e.g., hiking, bicycling, and equestrian uses) suitable for the trail width, location, waterbody crossings, and trail surfaces to avoid or minimize adverse effects to soil, water quality, or riparian resources. • Monitor trail condition at regular intervals to identify drainage and trail surface maintenance needs to avoid, minimize, or mitigate adverse effects to soil, water quality, and riparian resources. • Manage designated trails to mitigate adverse effects to soil, water quality, and riparian resources from over-use when closure and rehabilitation is not practicable or desired. • Change trail class and season-of-use period as necessary. • Close and rehabilitate unauthorized trails that are causing adverse effects on soil, water quality, and riparian resources.
	<p>All wetlands and fens within the vicinity of any ground disturbing activities or tree felling should be clearly delineated and flagged by a qualified individual prior to construction.</p>
Wilderness	<p>GTR shall create and/or maintain enforceable closures that prohibit guests from accessing the JSW through non-designated access points.</p>
	<p>GTR will continue to prohibit overnight backpackers on lifts that provide access to the JSW.</p>
	<p>The boundary of the JSW will be flagged and marked, specifically near Fred's Mountain Top Guest Facility, so as to not allow material from higher elevations enter the lower elevation JSW. If needed, sediment fences and erosion mitigation systems will be put in place to limit material movement into the JSW.</p>

Resource	Project Design Criteria
Livestock and Grazing	<p>Should issues arise between the operations of existing livestock, specifically cattle, and grazing permit holders and GTR, GTR will cooperate with the Forest Service and livestock and grazing permittee and take measures, including but not limited to, the installation of vegetative buffers and fencing to protect the interests of both permit holders as directed by the Forest Service. Any installation costs of vegetative buffers or fencing construction and maintenance shall be borne by GTR.</p>
Fire and Fuels	<p>Following implementation, GTR must comply with the following Fuels Mitigation Standards for proposed structures:</p> <p><u>Immediate Zone – 0 – 5'</u>: The structure and the area 0-5' from the furthest attached exterior point of the structure; defined as a non-combustible area. This is the most important zone to take immediate action on as it is the most vulnerable to embers. Start with the structure itself then move into the landscaping section of the Immediate Zone.</p> <ul style="list-style-type: none"> • Clean roofs and gutters of dead leaves, debris and pine needles that could catch embers. • Replace or repair any loose or missing shingles or roof tiles to prevent ember penetration. • Reduce embers that could pass through vents in the eaves by installing 1/8 -inch metal mesh screening. • Move any flammable material away from wall exteriors – mulch, flammable plants, leaves and needles, firewood piles – anything that can burn. <p><u>Immediate Zone – 5 – 30'</u>: 5-30' from the furthest exterior point of the home. Landscaping/hardscaping-employing careful landscaping or creating breaks that can help influence and decrease fire behavior</p> <ul style="list-style-type: none"> • Clear vegetation from under large stationary propane tanks. • Create fuel breaks with driveways, walkways/paths, patios, and decks. • Keep lawns and native grasses mowed to a height of four inches. • Remove ladder fuels (vegetation under trees) so a surface fire cannot reach the crowns. Prune trees up to six to ten feet from the ground; for shorter trees do not exceed 1/3 of the overall tree height. • Space trees to have a minimum of eighteen feet between crowns with the distance increasing with the percentage of slope. • Tree placement should be planned to ensure the mature canopy is no closer than ten feet to the edge of the structure. • Tree and shrubs in this zone should be limited to small clusters of a few each to break up the continuity of the vegetation across the landscape. <p><u>Extended Zone – 30 – 100', out to 200'</u>: Landscaping – the goal here is not to eliminate fire but to interrupt fire's path and keep flames smaller and on the ground.</p> <ul style="list-style-type: none"> • Dispose of heavy accumulations of ground litter/debris. • Remove dead plant and tree material. • Remove small conifers growing between mature trees. • Trees 30 to 60 feet from the home should have at least 12 feet between canopy tops.* • Trees 60 to 100 feet from the home should have at least 6 feet between the canopy tops.* <p>*The crown spacing needed to reduce/prevent crown fire potential could be substantially greater due to slope, the species of trees involved and other site-specific conditions.</p> <p>Add a Fire Danger/Fire Prevention Sign along Ski Hill Road to alert visitors on the current fire danger that day.</p>

2.5 Alternatives Considered but Eliminated from Detailed Analysis

The range of alternatives considered by the responsible official include the Proposed Action, as well as other alternatives eliminated from detailed analysis. The Forest Service Handbook 1909.15 states, “Alternatives not considered in detail may include, but are not limited to, those that fail to meet the Purpose and Need, are technologically infeasible or illegal, or would result in unreasonable environmental harm” (USDA Forest Service 2012).

The following design options were identified through internal and external scoping and considered by the ID Team, but ultimately eliminated from further analysis:

- South Bowl SUP expansion with three chairlifts;
- South Bowl SUP expansion without chairlifts;
- South Bowl interim cat-skiing;
- Alternatives responding to community drinking water quality concerns raised during scoping; and
- Alternatives without on-mountain facilities.

2.5.1 SUP Expansion and South Bowl Configuration with Three Lifts

The initial proposal for South Bowl included a 600-acre area bordering the existing GTR permit boundary that would have included three lifts: South Bowl West, South Both East, and South Bowl Connector. This design extended the SUP boundary East to meet the Wilderness boundary and further South, providing guest access to a considerable area of expert terrain. These slopes are familiar to locals and backcountry skiers, who posed concerns regarding avalanche safety and risk mitigation.

A preliminary avalanche study revealed that the South Bowl area contains high avalanche risk. The area under South Bowl West could be managed with boot packing and explosives risk reduction, and while it would require aggressive management in order to provide guests with a safe experience, it is possible to create a controlled environment. The South Bowl West Lift would also be located outside of predicted avalanche paths, reducing the risk of infrastructural damage. The other areas; however, would require abundant explosives risk reductions and additional expenses for a very limited ability level of skiers. Due to the nature of the terrain, avalanche risk mitigation would be more difficult and dangerous and less cost-effective in these areas. Therefore, these lifts and their areas of skiable terrain were eliminated from the South Bowl SUP expansion plan. The currently proposed SUP expansion described in under the Proposed Action would allow GTR to perform avalanche mitigation in this area in a way that would both provide increased opportunities for lift served skiing and mitigate potential risks associated with improved access to this area from the construction of the Colter Lift.

In addition to public safety concerns, the removal of the South Bowl East and South Bowl Connector Lifts and reduced SUP expansion area would also address the following resource concerns that were identified during public scoping:

- Scenery concerns associated with tree removal, chairlift and ski terrain construction;
- Socioeconomics concerns associated with increased capacity associated with a three-lift configuration that could cause a commensurate increase in visitation, including impacts to affordable housing; and
- Wildlife (Bighorn Sheep in particular).

2.5.2 SUP Expansion and Incorporation of South Bowl as Hike-To Only Terrain

This design option was explored as a means of providing access to South Bowl ski terrain for GTR guests while responding to the resource concerns associated with chairlift construction and long-term lift-served access to this

terrain. In this scenario, a cat-track would have been constructed near the bottom of South Bowl as a catchment trail for all guests accessing this terrain, which guests would have then used to skate back to the resort.

However, upon detailed investigation, it was learned that the skate back to the resort along the cat-track would be well over a mile, meaning that this would be an unappealing experience for visitors, especially snowboarders who have a particularly difficult time crossing flat (low-grade) terrain. This type of experience is not desirable for an area to be included within GTR's terrain network; however, this alternative eliminated does not preclude GTR's management of this area in a different capacity.

2.5.3 South Bowl Interim Cat-Skiing

After the scoping period, the project proponent determined that there was insufficient demand for this project component to warrant the necessary financial expenditure or resource impacts (the interim cat-skiing operation would require the creation of a cat-track in South Bowl) that would result from implementation. In short, this project component lacked financial viability, and thus was dropped from the proposal following scoping.

2.5.4 Alternatives Responding to Community Drinking Water Quality Concerns Raised During Scoping

During the scoping period, issues were raised by members of the public about the potential deterioration of water quality in the communities downstream of GTR (e.g., Alta, Driggs, Victor and surrounding farms) resulting from ski area projects there, although no specific element of GTR's operation was identified as the cause behind water quality deterioration. As such, potential alternatives were discussed but ultimately eliminated from inclusion in the proposal because it was not clear that any particular alternative would respond directly to the issues that were raised. If any particular project component associated with the action alternatives is found to generate downstream/slope water quality issues, in a way that could not be managed or mitigated, that project component would not be approved. This would be determined following detailed hydrology and geohydrology analyses that would be prepared specifically for this project.

2.5.5 Alternatives Without On-Mountain Facilities

During the scoping period, commenters expressed concern about resource impacts resulting from the on-mountain facilities. These comments primarily centered around the following resources: visuals, (including night lighting), socioeconomics, water resources, and wildlife. These alternatives were ultimately eliminated from detailed analysis in the EIS because any/all of the on-mountain facilities can be removed by the decisionmaker in the decision document, meaning that there is no need for a dedicated alternative without on-mountain facilities to be analyzed in full. If any resource impacts associated with the on-mountain facilities are identified in the EIS, the decisionmaker may respond by simply dropping the on-mountain facilities in question from any alternative that may potentially be approved. An analysis of not proceeding with any of these components would be contained in review of the No Action Alternative.

2.6 Summary Comparison of Direct and Indirect Environmental Consequences

A summary of direct and indirect environmental consequences are provided in the Summary Comparison Table in **Appendix D**.

Chapter 3. Affected Environment and Environmental Consequences

This chapter describes the existing environment for resources across the human and biological environments that have the potential to be affected by implementing the Proposed Action. Each Affected Environment description is followed by an Environmental Consequences discussion that provides an analysis of the potential effects of implementing the Proposed Action. *Direct effects* are caused by the action and occur at the same time and place. *Indirect effects* are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (i.e., likely to occur within the duration of the project). *Cumulative effects* are the result of the incremental direct and indirect effects of any action when added to other past, present, and reasonably foreseeable future actions, and can result from individually minor but collectively significant actions taking place over a period of time. This chapter is based on the issues identified in **Section 1.7**.

3.1 Recreation

3.1.1 Scope of the Analysis

This analysis is a summarization of the [Recreation Technical Report](#), which can be found in the project file.⁸ The scope of this analysis of recreational opportunities extends to winter and summer uses at GTR on NFS lands within the existing SUP area and on adjacent NFS lands in the South Bowl, Mono Trees, Teton Canyon, South Leigh Canyon, and JSW areas. With the exception of private lands in the base area, the entirety of GTR's existing lift, trail, and infrastructural network operates on public lands administered under a SUP from the CTNF. This analysis defines the existing recreational opportunities within the GTR SUP area and provides an analysis of potential changes to the recreational resources anticipated with proposed projects. Specifically, this analysis discusses the proposed expansion of the existing SUP boundary into the South Bowl and Mono Trees areas, existing and proposed ski terrain, skier density, multi-season recreation opportunities, and user experiences both within and adjacent to the existing SUP area during the summer and winter seasons.

3.1.2 Federal, State, and Local Policy and Guidance

Management of the recreation resources on NFS lands is directed the *1997 Forest Plan* and informed by the Recreation Opportunity Spectrum (ROS), a recreation classification system used in the 1997 Forest Plan.

RECREATION OPPORTUNITY SPECTRUM

The ROS is a tool used by Forest Service managers to zone for different recreation opportunities across the forest based on zone size, distance from roads, and degree of development.⁹ The ROS is used to guide planning of existing and potential recreation activities on NFS lands and provides a baseline against which future conditions and management actions can be prepared. The ROS classifies NFS lands into six management class categories defined by setting and the recreation experiences allowed therein, including: urban, rural, roaded natural, semi-primitive motorized, semi-primitive non-motorized, and primitive. ROS

⁸ SE Group 2023a

⁹USDA Forest Service 1986

for the GTR SUP area is classified as roaded natural to urban.¹⁰ The ROS for the South Bowl and Mono Trees areas is classified as a combination of semi-primitive nonmotorized and roaded natural opportunities.¹¹ Refer to the Recreation Technical Report for a more detailed description of ROS management class settings and definitions.

1997 FOREST PLAN FOR THE TARGHEE NATIONAL FOREST

As identified within the *1997 Forest Plan*, the study area is composed of three different Management Prescriptions: Management Prescription 4.2 – *Special Use Permit Recreation Sites*, located within GTR’s existing SUP area; Management Prescription 2.1.2 – *Visual Quality Maintenance*, located adjacent the GTR SUP area and overlapping the proposed South Bowl and Mono Trees areas; and Management Prescription 2.8.3 – *Aquatic Influence Zone*, located within and adjacent to the GTR SUP area and overlapping the proposed Mono Trees area. Refer to **Figure 1** for a depiction of the existing *1997 Forest Plan* Management Prescriptions.

The CTNF has Forest-wide and Management Prescription-specific goals, objectives, standards, and guidelines relating to recreation. Specifically, Forest-wide goals include providing a quality winter recreation experience, and Management Prescription 4.2 – *Special Use Permit Recreation Sites* primarily focuses on recreation. The management emphasis for prescription 4.2 – *Special Use Permit Recreation Sites* is on *providing privately operated types of recreation on National Forest land for large concentrated groups of people*. All Management Prescriptions within the study area are relevant to this analysis of recreation as the Proposed Action would use a programmatic amendment to convert approximately 866 acres of NFS lands, currently within Management Prescriptions 2.1.2 – *Visual Quality Maintenance* and 2.8.3 – *Aquatic Influence Zone*, to Management Prescription 4.2 – *Special Use Permit Recreation Sites*. Refer to **Appendix C** for more details on this programmatic amendment. Refer to the **Recreation Technical Report** for a full description of Forest-wide and Management Prescription-specific goals, objectives, standards, and guidelines relating to recreation and relevant to this analysis.

3.1.3 Affected Environment

RECREATION IN THE GTR SUP AREA

GTR is a destination resort that attracts local and out-of-state visitors of all ability levels. Since its inception as a ski area in the 1960s, GTR has gained recognition for its abundant, quality snow, diverse terrain, and uncrowded slopes; however, the current terrain distribution, including the undeveloped terrain network, at GTR disproportionately caters to upper ability level guests (e.g., advanced-intermediate and expert ability levels). GTR generally lacks an adequate amount of beginner and intermediate terrain to provide an appropriate learning progression. As a result, GTR’s ability to meet public demand for certain terrain types and attract new visitors to the CTNF is limited. Without additional developed terrain that suits a greater range of ability levels, GTR would continue to be challenged to provide the type of recreation experience consistent with guest expectations. In addition to winter operations, growing numbers of summer visitors to Teton County, Wyoming have resulted in increased interest in multi-season recreation opportunities at GTR. Improvements to ski area infrastructure, facilities, activity offerings, and other components are needed to address ever-changing guest expectations.

¹⁰USDA Forest Service 1997

¹¹ Ibid

Terrain Network

GTR has unique terrain distribution of both developed and undeveloped terrain. The developed, or formalized, terrain network at GTR consists of the named, defined, lift-serviced, maintained runs at the resort. GTR's developed ski trail network accommodates beginner- through expert-level guests on lift-served trails spanning approximately 680 acres.¹² **Table 3.1-1** displays the distribution of terrain by skier ability level for the developed trail network, as well as the distribution of the active skier population at GTR. The terrain distribution is compared to the industry market norm.

Table 3.1-1. Developed Terrain Network Distribution by Ability Level – Existing Conditions

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier Market (%)
Beginner	0.7	20.3	1	5
Novice	24.1	289.4	10	15
Low-Intermediate	27.9	223.4	7	25
Intermediate	202.0	1212.2	40	35
Advanced-Intermediate	202.5	810.1	27	15
Expert	226.5	452.9	15	5
Total	683.7	3,008	100	100

Source: SE Group 2022

Table 3.1-1 illustrates a relatively close match between GTR's existing terrain distribution and the market demand for the intermediate ability level. The deficiency of beginner terrain reflects the small amount of terrain served by the Papoose carpet. Novice and intermediate terrain are both very closely matched to the market. There is a deficiency of low-intermediate terrain, which indicates that it can be difficult for skiers to progress from novice-level to intermediate-level runs. The surplus of advanced- and expert-level terrain reflects the market niche of GTR, which is well-known for having high quality and diverse upper-ability level terrain. Given that reputation, this surplus is not seen as a constraint, as long as other ability levels are well balanced.

Additionally, GTR is deficient in its total amount of developed terrain available within its SUP area, and this is partially due to its abundance of undeveloped terrain. The undeveloped terrain at GTR is highly desirable and provides terrain variety that is sought by many skiers; however, in this way, it is also a limiting factor. The current terrain variety and distribution at GTR for both developed and undeveloped terrain serves a niche for challenging and extreme terrain, however, users of this ability level also desire a variety of terrain types and challenges that are not available at GTR in its current state.

¹² SE Group 2018

For more information on terrain calculations and analysis information, please refer to the **Recreation Technical Report**.

Visitation and Resort Capacity

Local population growth has been steadily increasing since 1990. As described in **Section 3.4**, Teton County, Wyoming has experienced steady growth between 1990 and 2020; however, at reducing rates. This is also true of the broader region, including Teton, Bonneville, and Madison counties in Idaho.

Similarly, annual skier visitation to GTR during the winter season has been steadily increasing over the past ten years, ranging from 166,884 skier visits during the 2013/14 season to 226,745 skier visits during the 2022/23 season.¹³ During this 10-year period GTR experienced annual growth rates from -12 to 30 percent. As is evident in **Table 3.1-2**, annual visitation has been steadily increasing in the last 10 years.

Table 3.1-2. Annual Visitation at GTR

Season	Annual Visitation
2022/23	226,745
2021/22	206,630
2020/21	231,309
2019/20	177,576
2018/19	193,188
2017/18	197,113
2016/17	164,122
2015/16	178,682
2014/15	175,630
2013/14	166,884
5-yr Average (19/20 – 22/23)	207,090

Source: GTR 2022a

The daily carrying capacity of a resort is described as the Comfortable Carrying Capacity (CCC). CCC does not indicate a maximum level of visitation but is rather a planning tool defined as the number of daily visitors a resort can comfortably or efficiently accommodate at one time without overburdening the resort's infrastructure. The CCC is derived from the resort's supply of vertical transport (the combined

¹³ GTR 2022a

uphill hourly capacities of the lifts) and demand for vertical transport (the aggregate number of runs demanded multiplied by the vertical rise associated with those runs). The CCC is calculated by dividing vertical supply (vertical transport feet/day) by vertical demand. In addition to chairlift and terrain capacity, all other related skier service facilities can be evaluated and planned based on the proper identification of CCC. An important consideration of a resort's CCC is a balance of services to support the capacity. For example, there needs to be sufficient guest facilities to accommodate and service visitors and their distribution across the resort. As a resort expands in terms of terrain and lift capacity, guest service capacity needs to likewise expand. The goal with balancing service facilities and terrain in terms of the CCC is to avoid pinch points and congestion, resulting in a desirable user experience. Under existing conditions, GTR's current CCC is calculated at 3,720 guests per day. It is not uncommon for ski areas to experience peak days during which skier visitation exceeds the CCC by as much as 25 percent; however, from a planning perspective, it is not recommended to consistently exceed the CCC due to the resulting decrease in the quality of the recreational experience, and thus the resort's market appeal.

Annual summer visitation at GTR remains much lower than annual winter visitation, reaching its peak in recent years (2021) with an estimated 33,375 visits.¹⁴ CCC is not calculated for summer operations as winter infrastructure and facilities provide surplus of accommodations for visitation that occurs in the summer months.

Facilities and Guest Services

Sufficient guest service space should be provided to accommodate the existing CCC of 3,720 guests per day. The CCC should be distributed between each guest service facility location according to the number of guests that would be utilizing the lifts and terrain associated with each facility.

Based upon a CCC of 3,720 skiers, GTR is deficient in overall guest service space when considering the low end of the recommended range. The areas with considerable space deficiencies compared with the industry standard include rentals/repair, kid's ski school, restaurant/bar seating, and kitchen/scramble. All four of these functions have substantial revenue-generation potential, so the shortages could be adversely affecting the resort's effective yield per skier. The shortage of restaurant seating is particularly noteworthy, since restaurant seating is typically in very high demand at destination resorts, as well as being an important profit center. In addition to these deficiencies, ticketing, lockers, adult ski school space, and restrooms space all show deficiencies. Refer to the **Recreation Technical Report** for more information on industry standards and space use categories.

Multi-Season Recreation

Alternate Winter Activities

For guests who seek activities other than skiing at GTR, there are a number of alternate activities to try. There are 5 miles of snowshoe trails available on two dedicated loops—one beginner and one advanced trail. The Nordic trail system at GTR consists of approximately 7 miles of groomed classic cross-country trails and skate skiing lanes. These trails are available in Rick's Basin, in the northern portion of the SUP area, and in the village meadow below the parking lots. Winter fat bikes share the Nordic trail system, as

¹⁴ Estimate is based on data provided by GTR (GTR 2022a). Total summer lift scans in 2021 were estimated at 25,673 and total assumed non-lift riders were 7,702. It is assumed that the number of non-lift riders equals approximately 30% of lift riders at GTR.

well as the advanced snowshoe trail; thus, fat bike enthusiasts have access to approximately 11 miles of trails. Lastly, GTR also operates snow tubing on the terrain served by the Papoose carpet from 4:00 p.m. to 7:00 p.m., Wednesday through Sunday.

Summer Activities

GTR offers a variety of summer recreational experiences including scenic chairlift rides on the Dreamcatcher Lift; hiking, biking, and equestrian trails within the SUP boundary, some of which are lift-served; a Summer Activity Zone for practicing cross-country and downhill mountain biking skills and abilities; special events and programs; and an 18-hole disc golf course. Both the Summer Activity Zone and the disc golf course are located partially on private lands in the GTR base area; however, all other summer activities occur within the GTR SUP area.

GTR is a well-known destination for mountain biking and bikers make up the majority of visits in the summer. The GTR Bike Park has been consistently listed in the top 5 Best Bike Parks in the Northwest.¹⁵ It offers cooler temperatures for riders to enjoy in the summers, which is part of its appeal along with scenic vistas and its variety of trails.¹⁶ The park has 17 miles of downhill biking trails as well as trails for hiking and horseback riding.¹⁷

RECREATION ON SURROUNDING NFS LANDS

The location and setting of GTR draws tourists to the area in the winter and summer. Its proximity to GTNP is an attraction as places within the GTR SUP area and along Ski Hill Road offer scenic views of the Tetons. Many visitors to Teton County, Wyoming and Teton County, Idaho are there to see major attractions such as Grand Teton and Yellowstone National Parks. Additionally, the Town of Jackson, Wyoming has a variety of summer events and attracts a large tourist population. Closer to GTR, there are regional summer recreational activities such as horseback riding, rafting, tennis, golf, fishing, mountain biking, wildlife viewing, and hiking. Visitors can also go participate in guided snowmobiling, skiing, backpacking, rafting or horseback riding trips around GTR.

In areas surrounding GTR, there are opportunities for winter activities such as cross-country skiing, snowshoeing, snowmobiling, mushing and skijoring, fat biking, and backcountry skiing. Backcountry skiing has become increasingly popular in the last decade as a result of various technological advances in equipment, including safety equipment, and a growing interest in the unique experience. The backcountry offers a sense of adventure, solitude, and self-awareness that simply cannot be experienced when skiing inbounds at a developed ski area and is particularly attractive to the type of skier that visits GTR (namely advanced and expert skiers who enjoy a natural experience).

GTR has a closed boundary/open exit point backcountry access policy, where skiers are permitted to leave the SUP boundary only through designated areas. There is a backcountry gate located between Fred's Mountain and Mary's Nipple. Additionally, there is a backcountry access point near the summit of Peaked Mountain referred to as the Noodle Ridge Gate (above the top terminal of the Colter Lift) and another further down the ridge referred to as El Dente Gate (below the top terminal of the Colter Lift).¹⁸

¹⁵ GTR 2022b

¹⁶ Ibid

¹⁷ Ibid

¹⁸ Communication with GTR and USFS, January 2023

The following paragraphs describe specific areas of NFS lands that are either of interest to recreationists or overlapped by the proposed SUP expansion project areas.

Mono Trees

Directly west of the Colter Lift and outside of the GTR SUP boundary is an area referred to as Mono Trees for the purposes of this environmental review. Its terrain descends south of GTR and into Teton Canyon. The area may have limited dispersed recreation but is not considered a destination for backcountry skiing or hiking. There is an existing backcountry access point, the Thunder Trees Gate, near the base of the existing Colter Lift that provides access into the area.

Mono Trees is consistent with the assigned ROS range of semi-primitive nonmotorized to roaded natural opportunities for Management Prescription 2.1.2 – *Visual Quality Maintenance*.¹⁹ It exists as a natural appearing environment with a high probability of experiencing solitude and a low interaction between users. There are some existing recreation trails in the area but no roads or facilities.

Teton Canyon

Teton Canyon extends east of Alta, Wyoming and is located south of GTR. It is located partially within the JSW. Within Teton Canyon, there are a variety of both winter and summer activities. In the winter, there are popular multipurpose snowmobile/cross-country trails at the base of Teton Canyon that offer views of the Teton mountains. Backcountry skiers entering this area often ski into the Canyon and either hike or are towed by a snowmobile on the groomed trails to exit the terrain. In the summer, a majority of visitors to Teton Canyon are hikers and campers. It is possible that hikers ride GTR's lifts to access hiking trails in Teton Canyon, outside of the SUP area. Other hikers access the area using trail access points along Teton Canyon Road. Popular trails in the area include the Mill Creek Trail, the North Teton Trail, and the South Teton Trail.

There are several outfitter and guide organizations that take users into the Teton Canyon area for guided backcountry experiences, such as Yostmark Mountain Equipment, Teton Backcountry Guides, and NOLS Teton Valley.

South Bowl

On the southern border of GTR's SUP area is a backcountry destination within Teton Canyon commonly referred to as South Bowl. Its terrain is characterized by steep slopes, open bowls, and rock bands. It has a south-facing aspect and the slope ranges from approximately 30 to over 60 degrees. The Noodle Ridge Gate above the top terminal of the Colter Lift provides access into South Bowl and can only be accessed by hiking up and over Mary's Nipple and up to Peaked Mountain. It is a minimum of one mile from the top of the Dreamcatcher Lift to Noodle Ridge Gate, there is no direct uphill access from the Colter Lift to the Noodle Ridge Gate. The El Dente Gate can be accessed from skiing downhill from the Colter Lift; however, it provides limited access to the South Bowl backcountry terrain. The backcountry terrain accessed by El Dente is a small shoulder of the South Bowl terrain.

This terrain is popular among advanced and expert-level skiers and experiences consistent use throughout the season. The accessibility of South Bowl is particularly attractive to many backcountry skiers as they can leave the SUP boundary, ski backcountry terrain, and return to in-bounds terrain with limited effort.

¹⁹ USDA Forest Service 1997

Specifically, skiers accessing the backcountry via the Noodle Ridge and El Dente points can return to the ski area on the south side of the Colter terrain pod where there is an opening in the rope line. This results in the majority of the backcountry skiers recreating in this area coming back the ski area boundary rather than descending into the bottom of Teton Canyon. This characteristic, along with the scenery and quality of terrain, contribute to its heavy use. A wildlife camera study performed for this analysis found that backcountry skier use was high, ranging from an estimated 5-10 skiers/month to 20+ skiers per month in the northern part of South Bowl. These are likely very conservative estimates due to accuracy limitations with game cameras.²⁰

Since the time of backcountry use monitoring, the Colter Lift has been constructed and is now open to the public. Primary access to the South Bowl area is unchanged from conditions prior to Colter Lift construction, with the exception of the El Dente Gate which did not exist prior to the lift construction. As previously mentioned, the El Dente Gate only accesses a limited area of the South Bowl backcountry terrain. Although use within this specific area has increased, it is confined to a limited spatial area. During the 2023 season (first season Colter Lift operations) a marginal increase in use patterns was observed within the South Bowl area.²¹

Since South Bowl is outside of GTR's operational boundary, avalanche safety procedures are not enforced. Therefore, the high level of use in this area creates a safety concern. The hike from the Dreamcatcher Lift to the backcountry access point prevents most inexperienced skiers who lack avalanche knowledge from entering the terrain. Although South Bowl is located outside of the GTR SUP boundary, GTR ski patrol does respond to occasional backcountry demands when necessary (refer to **Section 3.7**).

The South Bowl area in its existing state is consistent with the assigned ROS range of semi-primitive nonmotorized to roaded natural opportunities for Management Prescription 2.1.2 – *Visual Quality Maintenance*.²² It exists as a natural appearing environment with a high probability of experiencing solitude and a low interaction between users. There are some existing recreation trails in the area but no roads or facilities.

South Leigh Canyon

South Leigh Canyon is located north of GTR and can also be accessed from Alta, Wyoming. The canyon is partially within the JSW. It is a popular backcountry skiing area in the winter and can be accessed from GTR through Scotty's Gate on the backside of Mary's Nipple. This portion of backcountry terrain is almost entirely within the JSW.

In the summer, a majority of visitors to South Leigh Canyon are hikers and campers. It is possible for hikers to ride GTR's lifts to access hiking trails for day-use in South Leigh Canyon, outside of the SUP area. Other hikers access the area using the trail access point on South Leigh Canyon Road. The South Leigh Lakes are a popular destination for visitors as well, along the South Leigh Creek, Granite Basin, Green Lakes Loop. From here, visitors are able to see the top of Fred's Mountain (refer to **Section 3.2**)

²⁰ Alder Environmental 2021

²¹ Communication with USFS and GTR, January 2023

²² USDA Forest Service 1997

3.1.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION

Under the No Action Alternative, nearly all components of the GTR recreational experience would remain the same as existing conditions.

Recreation in the GTR SUP Area

Terrain Network

Under the No Action Alternative, GTR's terrain network would include a total of approximately 680 acres of developed terrain, as well as undeveloped and characteristically challenging terrain contained in glades and bowls. The deficit of developed beginner and low-intermediate terrain and the surplus of advanced-intermediate and expert terrain compared with market characteristics and described under **Section 3.1.3**, would persist (refer to **Table 3.1-1**).

Visitation and Resort Capacity

Visitation to GTR would continue to reflect baseline trends, with an average annual growth rate of approximately 1.0 percent between the 2022/23 and 2032/33 seasons. Refer to **Table 3.1-3** below for projected visitation as a result of the No Action Alternative.

Table 3.1-3. Visitation Projections – Alternative 1

Season	Projects	Annual Visitation
2022/23	Colter Pod Opens with Lift Service	226,745 ²³
2023/24	-	249,330
2024/25	-	244,063
2025/26	-	249,383
2026/27	-	254,702
2027/28	-	260,022
2028/29	-	265,342
2029/30	-	260,022
2030/31	-	254,702
2031/32	-	254,702
2032/33	-	249,349

²³ 2022/23 is an actual annual visitation number as referenced in Table 3.1-2. Actual visitation was not available for any subsequent years at the time of reporting. Projections are based on best available data.

Source: SE Group 2021

Under the No Action Alternative, annual growth is anticipated to increase approximately 10 percent between the 2022/23 and 2023/24 seasons to nearly 250,000 visitors with the recent construction of the Colter Lift. Peak visitation in the projections for this alternative would be in the 2028/29 season at 265,342 visitors total, an increase of 38,597 from the 2022/23 season.

Under the No Action Alternative, ongoing expected impacts of climate change may affect the timing of visitation and the numbers of visitors during the winter season compared to summer, as well as the spring and fall “shoulder” seasons. Changes in the onset and duration of natural snowfall and the ability of GTR to make snow may alter the spectrum and seasonality of recreational opportunities at the resort. Refer to **Section 3.11** prepared for this analysis for more information.

Multi-Season Recreation

Under the No Action Alternative, current summer and alternate winter activities would still be provided. Demand for multi-season recreation opportunities would be expected to continue to grow, consistent with the trends of recent years and the industry as a whole.

Recreation in Surrounding NFS Lands

Participation in backcountry recreation is anticipated to increase with current trends and could be exacerbated in South Bowl by the presence of the Colter Lift. The 2023 season indicated that the Colter Lift has resulted in marginal increases in use within the South Bowl area. Implementation of the Colter Lift has not changed access points to South Bowl from those that were available to the public under existing conditions, but rather has created a more consistent but higher use pattern within portions of the South Bowl area. Under the No Action Alternative, this is expected to continue into the future. Increased backcountry use in this area may result in increased avalanche accidents and injuries (refer to **Section 3.7**).

Other recreation in surrounding NFS lands would not change from existing conditions.

ALTERNATIVE 2 – PROPOSED ACTION

Recreation in the GTR SUP Area

Terrain Network

Under the Proposed Action lift-served ski terrain in the South Bowl area of Teton Canyon and in Mono Trees area would be made accessible through SUP boundary expansions totaling 866 acres (refer to **Figure 2**). The expanded SUP would be served by the proposed South Bowl and Mono Trees chairlifts, and in total would provide access to nearly 930 acres of developed ski terrain across ski trails of various difficulties. These ski trails would increase both terrain distribution and variety for a range of ability levels. Beginner and novice skiers would have access to more terrain as compared to the No Action Alternative. The density of skiers would be similar to the No Action Alternative; however, there would be a larger variety of terrain which would provide a more ideal guest experience.

In addition to the South Bowl and Mono Trees areas, the Proposed Action would include approximately 214 acres of traditional terrain developments and improvements within the existing GTR SUP boundary. This includes additional beginner terrain around the Papoose Carpet, Palmer Platter, and Shoshone Lifts;

new intermediate and expert terrain under the proposed North Boundary Lift; additional expert terrain under the proposed Crazy Horse Lift; and improvements to key circulation trails such as the Teton Vista Traverse. Terrain enhancements within the SUP boundary would accommodate the anticipated increase in visitation, provide more variety of terrain in different areas on the mountain, and improve skier circulation.

Terrain variety would also be enhanced through the creation of “groomable glades” in the Colter Lift area, meaning that vegetation would not be cleared entirely from edge-to-edge and some natural features would be maintained on trails. This would provide a more natural, backcountry experience while still being appropriate for intermediate and advanced level guests and expanding upon the developed terrain available to expert ability level guests. Providing an experience that replicates the natural and backcountry style of skiing available elsewhere in the GTR SUP area also supports a learning progression as guests become more comfortable with the extensive undeveloped terrain network. Providing variety within the developed terrain network is important to holding the interest of intermediate, advanced-intermediate, and expert ability level skiers. The more skiing opportunities presented at the resort for a skier of a given ski level, the more likely they will be to either stay longer or return in the future. This increased interest correlates to increased length of stay as the guest experience is enhanced through greater opportunities within their ability level.

Table 3.1-4 describes the impact the proposed trails within the GTR SUP area and proposed SUP expansion areas would have on terrain distribution throughout the terrain network.

Table 3.1-4. Developed Terrain Network Distribution by Ability Level – Alternative 2

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier Market (%)
Beginner	1.7	49.5	1	5
Novice	12.0	143.9	4	15
Low-Intermediate	36.5	291.8	7	25
Intermediate	287.3	1723.9	44	35
Advanced-Intermediate	283.6	1134.5	29	15
Expert	304.9	609.9	15	5
Total	926.0	3,953	100	100

Source: SE Group 2022

As detailed in **Table 3.1-4**, the distribution of intermediate terrain would increase to 44 percent, and advanced-intermediate and expert terrain would remain well above the skier market standards. These changes better reflect the skier market particularly at GTR, which caters to primarily advanced and expert ability level skiers. Also included in **Table 3.1-4** is a decrease in the distribution of Novice and Low-Intermediate terrain. This is explained by some trail projects, such as the realignment of the Teton Vista

Traverse, which would change its difficulty from Novice to Intermediate. However, the decrease in distribution is also explained by an increase in beginner, intermediate, advanced-intermediate, and expert terrain acreage as a result of the proposed projects. Since skier and rider distribution for each ability level is a proportion of the total, the distribution of an ability level can decrease even when the trail area of that ability level increases. While the distribution of these ability levels still represents a deficit in relation to market standards, the increases in other terrain ability levels align with GTR's purpose and need of increasing the quantity of beginner, intermediate, advanced-intermediate terrain to meet current and anticipated public demand.

In addition to developed ski trails, additional undeveloped terrain and gladed areas would become available in the existing terrain network as well as in the South Bowl and Mono Trees areas, adding variety for upper ability level skiers. Although there are currently opportunities for expert ability level glade skiing within the existing terrain network, the additional terrain would better meet guest expectations for increased diverse terrain offerings. Adding variety in the form of undeveloped terrain for guests of these ability levels is important, as terrain diversity is what keeps upper ability level guests interested. The installation of two chairlifts in the Mono Trees and South Bowl areas would increase the variety of terrain to over 800 acres of developed and undeveloped terrain. The expanded terrain would address the Purpose and Need of providing additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails to enhance terrain variety and skiing experiences at GTR.

Visitation and Resort Capacity

Population growth in the county and region is expected to continue with current trends described under the No Action Alternative. Refer to **Section 3.4** for more information.

It is anticipated that upon implementation of projects included in the Proposed Action, annual winter visitation and growth rates at GTR would increase from baseline conditions (**Table 3.1-5**).

Table 3.1-5. Visitation Projections – Alternative 2

Season	Projects	Annual Visitation
2022/23	Colter Pod Opens with Lift Service	226,745 ²⁴
2023/24	-	249,330
2024/25	Mono Trees Pod and Lift Constructed	273,063
2025/26	-	279,369
2026/27	Shoshone Lift Upgraded/Papoose/Platter	276,060
2027/28	-	276,060

²⁴ 2022/23 is an actual annual visitation number as referenced in Table 3.1-2. Actual visitation was not available for any subsequent years at the time of reporting. Projections are based on best available data.

2028/29	Lift Installed in South Bowl	303,886
2029/30	-	311,164
2030/31	Crazy Horse Lift Installed	322,621
2031/32	-	322,621
2032/33	North Boundary Lift Installed	330,866

Source: SE Group 2021

Under the Proposed Action, annual growth is anticipated to increase to approximately 10 percent between the 2024/25 and 2025/26 seasons once the Mono Trees Lift becomes accessible, and an additional 10 percent between 2028/29 and 2029/2030 seasons once the South Bowl Lift is installed. Average annual growth in visitation between 2022/23 and 2032/33 would be approximately 3.9 percent, steadily increasing through periods of implementation. Peak growth in projected visitation for this alternative would be reached in the 2032/33 season at 330,866 visitors total, an increase of 65,525 from peak seasons in No Action alternative.

The installation of the South Bowl and Mono Trees Lifts outside of the existing SUP boundary, as well as the installation of the Crazy Horse and North Boundary Lifts and the Shoshone Lift and Papoose carpet upgrades, would result in an increased CCC under the Proposed Action. Under the Proposed Action, the CCC at GTR would increase from 3,720 guests per day to 6,170 guests per day. Although annual visitation and CCC would increase with the Proposed Action, it is anticipated that the proposed upgrades and additions to terrain and facilities would accommodate these changes.

Summer visitation is also anticipated to increase under the Proposed Action; however, due to limited summer visitation data, it is undetermined how much visitation would increase. Even in a highest impact scenario, it is clear that summer visitation would remain fractional when compared to winter visitation at GTR. GTR would be capable of providing a similar recreation experience for any increase in summer visitation that would be attributable to implementation of the Proposed Action. However, climate change may have an impact on the timing and amount of summer visitors, especially those who chose recreational opportunities during the summer as well as the spring and fall “shoulder” seasons. These seasons may be extended due to changes in the timing of precipitation, the onset and length of the snow season, and warmer temperatures in the shoulder seasons (refer to **Section 3.11** for more information on climate change).

Facilities and Guest Services

Under the Proposed Action, GTR would expand its ski patrol operations to account for the expanded SUP boundary and incorporation of the South Bowl and Mono Trees areas into the developed lift and trail network. While the extent of ski patrol operations would extend into both areas, particular attention would be placed on South Bowl given the management of avalanche risks associated with this terrain. A ski patrol/skier services outpost would be constructed at the top of the proposed South Bowl chairlift, avalanche mitigation infrastructure would be installed in the South Bowl area (two avalaunchers and two avalanche rescue caches), and snow safety activities would be expanded to accommodate new terrain in the South Bowl area. As previously described, there is a need for this additional ski patrol facility as the

existing ski patrol facility at the top of Colter Lift is down ridge from the top terminal of the South Bowl Lift and much of the terrain it serves. Constructing a ski patrol facility at the top of the South Bowl Lift would provide patrol access to the newly developed South Bowl area and would ensure timely responses to potential accidents in the area. To serve the guests in South Bowl, a vault toilet restroom would be constructed at the base of the proposed South Bowl Lift as well.

Several other guest services facilities are proposed within the GTR SUP boundary under the Proposed Action, including: two on-mountain restaurants at the top of Sacajawea and Dreamcatcher Lifts, guest facilities at the top of the Shoshone Lift, in Rick's Basin, and on Lightning Ridge near the top terminal of the proposed Mono Trees Lift, a storage and vault toilet facility at the base of the North Boundary Lift, and improving the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility. All facilities are intended to improve the guest experience by offering services such as food and beverage, improved customer service through additional staff resources, and areas to escape the weather on the mountain. These facilities would accommodate the anticipated increase in CCC and would provide a balanced amount of space under proposed conditions.

Multi-Season Recreation

Upon implementation of the Proposed Action, GTR would expand their multi-season and summer activities in the Summer Activity Zone around the Shoshone Lift. Proposed activities include a canopy tour/fly line, zip line, and aerial adventure course. All activities would be located on NFS lands within the Summer Activity Zone (refer to **Figure 3**). The disc golf course would also be re-located within the Summer Activity Zone to the north of the proposed canopy tour/fly line. The canopy tour would travel through the tree canopy and guests would wear harnesses and use short zip lines to travel from station to station, and the fly line would be a hybrid mountain coaster/zip line where guests wear harnesses but travel along a track from station to station. The zip line would have multiple segments so that guests can first get familiar with the harness and equipment and then go on a longer zip line of over 2,000 feet. The aerial adventure course would be an elevated challenge course that includes a series of elements of varying length and difficulty for both adults and children. Each of these proposed project components would broaden the diversity of users able to participate in activity-based interaction with a forested, mountain environment on NFS lands by providing opportunities that require little specialized knowledge, skills, equipment or familiarity with a high alpine environment. By supplementing the existing dispersed recreation opportunities at GTR with more structured and developed recreational offerings, user groups such as families, the elderly/aging, or those with disabilities are provided an opportunity to interact with the CTNF in a meaningful way that is currently lacking within the GTR SUP area.

Additionally, approximately 29 miles of hiking, biking, and multi-use trails are proposed within the GTR SUP boundary (refer to **Figure 3**). The Proposed Action would support all ability levels and all types of mountain biking, also continuing to expand cross-country opportunities in the SUP area through the inclusion of multi-use trails. Since GTR already has a robust bike park, additions to biking trails are primarily to enhance the existing network and fill in gaps rather than re-create the experience. It is anticipated that some of the proposed mountain biking trails would include jumps, rolls, wood bridging, and other terrain features that provide a fluid and flowing ride that is currently demanded by many mountain bikers. All terrain features would be constructed consistent with the ability level of a specific trail and would be designed to provide users with opportunities for learning progression within the terrain network as a whole.

It is anticipated that when added to the existing trail network available on GTR and adjacent NFS lands, the proposed mountain biking, hiking, and multi-use trails would more adequately address the needs of a variety of user groups than is done by the No Action Alternative by increasing terrain variety and connectivity for a range of ability levels. With the construction of these new trails, GTR could also potentially minimize the development of unsanctioned/unplanned trails on other CTNF managed lands and provide quality recreation in a managed fashion. The Proposed Action would expand Nordic skiing, snowshoeing, and fat bike offerings and GTR would construct a dedicated snow tubing facility. The development of additional and improved trails in the Nordic skiing and fat biking network would improve access into Rick's Basin and would provide a more desirable winter experience for guests who seek alternate activities. Further, while GTR's snow tubing operation provides an amenity to guests who stay overnight at the resort. It currently utilizes the Papoose carpet and wide-open teaching terrain for snow tubing, limiting GTR's ability to meet guest expectations for alternate forms of recreation. A designated snow tubing facility (with permanent lanes and a dedicated lift) would allow GTR to offer an experience consistent with its goals.

Recreation in Surrounding NFS Lands

The Proposed Action would expand the developed recreational offerings within GTR's SUP boundary, and it is anticipated that overall recreational use patterns in the area (i.e., within the SUP boundary and surrounding NFS lands) would change. The Proposed Action may attract additional visitors, particularly those seeking a more developed recreational experience in the summer. These users (likely mountain bikers) may choose to recreate within the GTR SUP boundary rather than on surrounding NFS lands. However, some user groups may also be displaced by additional development and increased use of trails within the GTR SUP boundary (e.g., equine users on multi-use trails). Other users also may use trails within the GTR SUP boundary to access trails in the surrounding areas, such as the Mill Creek multiuse trail. Additionally, the Proposed Action may redistribute trail users on NFS lands surrounding GTR to trails or other proposed activities within the GTR SUP boundary. Because multi-season recreation opportunities already exist at GTR and on surrounding NFS lands it is anticipated that this would be a minor shift and users will continue to recreate in areas outside the SUP boundary, especially when considered in the context of growing population and the local community. The Proposed Action would likely increase the use of overnight facilities such as campgrounds and dispersed camping areas near GTR, particularly in Teton Canyon as they have the potential to draw more users to the area overall.

While recreationists on other NFS lands may not be displaced under this alternative, use patterns, particularly those related to adjacent JSW lands could be impacted (refer to **Section 3.9** for more information).

Mono Trees

The Proposed Action proposes to expand the GTR SUP boundary so that it includes an additional 600 acres in the Mono Trees area. This area is not a popular recreation destination in its existing state, so the Proposed Action is not expected to measurably displace users. Further, incorporating the Mono Trees area into the GTR SUP boundary would benefit the GTR guest experience. As described previously, the area would provide additional developed and undeveloped terrain for intermediate and advanced intermediate skiers, including gladed skiing opportunities, which would support a skills progression from intermediate to advanced ability levels.

Under the Proposed Action, the GTR SUP Boundary would be amended to incorporate Mono Trees expansion and would be managed according to Management Prescription 4.2 – *Special Use Permit Recreation Sites*.²⁵ The ROS for this prescription ranges from roaded natural to urban. With the proposed development in Mono Trees, it would become a mostly natural appearing environment with some visible trails, roads, and ski area infrastructure, similar to the existing SUP area.

Teton Canyon

South Bowl

Under the Proposed Action, terrain in the South Bowl would be incorporated into GTR's SUP boundary and would no longer exist as an opportunity for backcountry recreation during the winter months. The installation of the South Bowl Lift, development of ski trails, and creation of gladed skiing areas would result in increased skier use of this terrain and a more developed recreational experience in South Bowl. Backcountry skiing within the portion of South Bowl that would be incorporated into GTR's SUP boundary under the Proposed Action would not be permissible.

The incorporation of the South Bowl into the SUP boundary would allow for avalanche control and other safety procedures in this area, which would greatly reduce safety hazards. As discussed previously, the South Bowl is currently a highly used backcountry area because of its visibility and accessibility from GTR's SUP area; however, the dangers posed by avalanches create a serious risk. By incorporating this area into the operational boundary, improved safety measures and accident response capabilities would address this concern.

By removing approximately 266 acres of backcountry terrain adjacent to GTR, it is anticipated that backcountry use of other areas adjacent to GTR, such as Teton Canyon, South Leigh Canyon, and potentially other areas throughout CTNF could increase. This would include a potential increase in snowmobile use in Teton Canyon to shuttle skiers accessing backcountry terrain from the SUP back to their cars. Because only a portion of the South Bowl area would be within the SUP boundary, and because surrounding terrain would remain in its existing state, some users seeking a backcountry experience may exit the SUP boundary just below Mary's Nipple and ski backcountry terrain to the extent possible for them to return to the South Bowl Lift. Additional backcountry points may be incorporated into the GTR SUP boundary in this area to control ingress/egress routes (refer to **Section 3.7** for more information).

The incorporation of backcountry terrain into the GTR SUP boundary may impact outfitter and guiding companies such as those mentioned in the affected environment. These outfitters may need to have their operational areas relocated to other areas of the CTNF if negatively affected by the incorporation of South Bowl into the GTR SUP area. Given the majority of the South Bowl and broader Teton Canyon area would continue to exist as backcountry ski terrain, relocation would be dependent on a specific outfitter's needs and desired guest experience.

Under the Proposed Action, the GTR SUP boundary would be amended to incorporate the South Bowl expansion and would be managed according to Management Prescription 4.2 – *Special Use Permit Recreation Sites*.²⁶ The ROS for this prescription ranges from roaded natural to urban. With the proposed

²⁵ USDA Forest Service 1997

²⁶ USDA Forest Service 1997

development in South Bowl, it would become a mostly natural appearing environment with some visible trails, roads, and ski area infrastructure, similar to the existing SUP area.

South Leigh Canyon

As described previously, the Proposed Action, and specifically inclusion of the South Bowl in the GTR SUP area, would displace some backcountry users. This may increase the use of South Leigh Canyon as a backcountry destination in the winter.

Summer recreation in South Leigh Canyon is not expected to experience measurable changes as a result of the Proposed Action.

ALTERNATIVE 3 – NO SPECIAL USE PERMIT BOUNDARY EXPANSION

Under Alternative 3, all projects within the SUP area are proposed, however, there would be no expansions to the GTR SUP boundary. Specifically, the South Bowl and Mono Trees areas would remain in their existing states.

Recreation in the GTR SUP Area

Terrain Network

Under Alternative 3, guests would have access to approximately 765 acres of developed ski terrain across various ability levels. **Table 3.1-6** describes the impact the proposed trails within the GTR SUP area would have on terrain distribution throughout the terrain network.

Table 3.1-6. Developed Terrain Network Distribution by Ability Level – Alternative 3

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier Market (%)
Beginner	1.7	49.5	1	5
Novice	12.0	143.9	4	15
Low-Intermediate	36.5	291.8	9	25
Intermediate	247.3	1484.1	44	35
Advanced-Intermediate	219.9	879.7	26	15
Expert	247.7	495.4	15	5
Total	765.1	3,344	100	100

Source: SE Group 2022

Without the South Bowl and Mono Trees terrain that is included under the Proposed Action, Alternative 3 would result in a lower acreage of intermediate, advanced-intermediate, and expert terrain than the Proposed Action. When considering skier/rider distribution, Alternative 3 would maintain the abundance of advanced intermediate and expert terrain, and increase the acreage and distribution of beginner and

intermediate terrain, aligning with GTR's markets and a portion of the Purpose and Need. A variety of advanced terrain is important in meeting the expectations of advanced and expert skiers. Alternative 3 would not address shortcomings in terrain variety without the Mono Trees and South Bowl areas relative to the Proposed Action for both developed and undeveloped terrain. While it would offer a greater selection of trails and difficulties within the SUP boundary, it would lack some of the terrain challenges associated with gladed skiing in Mono Trees and the chutes, bowls, and gladed areas in South Bowl.

Visitation and Resort Capacity

Population growth in the county and region is expected to continue with current trends described under the No Action Alternative (refer to **Section 3.4**).

It is anticipated that upon implementation of projects included in the Alternative 3, annual winter visitation growth rates at GTR would increase from baseline conditions. Refer to **Table 3.1-7** below for projected visitation as a result of Alternative 3.

Table 3.1-7. Visitation Projections – Alternative 3

Season	Projects	Annual Visitation
2022/23	Colter Pod Opens with Lift Service	226,745 ²⁷
2023/24	-	249,330
2024/25	Shoshone Lift Upgraded/Papoose/Platter	247,342
2025/26	-	252,704
2026/27	Crazy Horse Lift Installed	263,729
2027/28	-	263,729
2028/29	North Boundary Lift Installed	271,584
2029/30	-	278,605
2030/31	-	278,605
2031/32	-	278,605
2032/33	-	271,600

Source: SE Group 2021

²⁷ 2022/23 is an actual annual visitation number as referenced in Table 3.1-2. Actual visitation was not available for any subsequent years at the time of reporting. Projections are based on best available data.

Under Alternative 3, annual growth is anticipated to increase to approximately 1.9 percent on average between the 2022/23 and 2032/33 seasons once the proposed projects are implemented. Annual growth would remain higher than the normal trend following the installation of the Crazy Horse and North Boundary Lifts, at 4 percent and 3 percent growth respectively. Growth in visitation is expected to peak in the 2029/30 season at 278,605 and then slow in the following seasons. In total, it is anticipated that Alternative 3 would result in an additional 13,264 skier visits in its peak season compared to the No Action Alternative.

The installation of the Crazy Horse and North Boundary Lifts and the Shoshone Lift and Papoose carpet upgrade would result in an increased CCC. Under Alternative 3, the CCC at GTR would increase from 3,720 guests per day in the No Action alternative to 4,910 guests per day. Although annual visitation and CCC would increase with Alternative 3, it is anticipated that the proposed upgrades and additions to terrain and facilities would accommodate these changes.

All summer projects proposed in Alternative 3 are the same as the projects included in the Proposed Action. Similar to the Proposed Action, summer visitation is anticipated to increase under Alternative 3. GTR would be capable of providing a similar recreation experience for any increase in summer visitation that would be attributable to implementation of Alternative 3. The impacts of climate change in visitation may also be a factor once Alternative 3 is implemented (refer to **Section 3.11**).

Facilities and Guest Services

Several guest services facilities are proposed within the GTR SUP boundary under Alternative 3, including: two on-mountain restaurants at the top of Sacajawea and Dreamcatcher Lifts, guest facilities at the top of the Shoshone Lift and in Rick's Basin, a storage and vault toilet facility at the base of the North Boundary, and improving the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility. All facilities are intended to improve the guest experience by offering services such as food and beverage, improved customer service through additional staff resources, and areas to escape the weather on the mountain. These facilities would accommodate the anticipated increase in CCC and would provide a balanced resort experience under Alternative 3.

Multi-Season Recreation

All multi-season recreation projects included in the Proposed Action are also included in Alternative 3. The recreation impacts and guest experience as a result of Alternative 3 would be consistent with those of the Proposed Action.

Recreation in Surrounding NFS Lands

Because Alternative 3 does not include an expansion to the GTR SUP boundary, it is not expected to have measurable impacts on recreational uses of surrounding NFS lands. Similar to the Proposed Action, Development of summer projects would result in trends similar to those described under the Proposed Action.

While recreationists on other NFS lands may not be displaced under this alternative, use patterns, particularly those related adjacent JSW lands could be impacted (refer to **Section 3.9**).

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Under Alternative 4, all projects in the SUP boundary are proposed as well as a SUP boundary expansion into the South Bowl area. The Mono Trees area would remain in its existing state.

Recreation in the GTR SUP Area

Terrain Network

Under Alternative 4, guests would have access to approximately 830 acres of developed ski terrain across a variety of ability levels. **Table 3.1-8** describes the impact the proposed trails within the GTR SUP area and proposed SUP expansion area would have on terrain distribution throughout the terrain network.

Table 3.1-8. Developed Terrain Network Distribution by Ability Level – Alternative 4

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier Market (%)
Beginner	1.7	49.5	1	5
Novice	12.0	143.9	4	15
Low-Intermediate	36.5	291.8	8	25
Intermediate	247.3	1484.1	43	35
Advanced-Intermediate	227.0	908.2	26	15
Expert	304.9	609.9	17	5
Total	829.4	3,487	100	100

Source: SE Group 2022

With the additional South Bowl terrain, Alternative 4 would result in a higher distribution of expert terrain and a lower distribution of advanced-intermediate and novice terrain than the Proposed Action. Intermediate, advanced-intermediate, and expert terrain distribution would remain well above the skier market. Alternative 4 would support the purpose and need of increasing the quantity of beginner, intermediate, advanced-intermediate terrain to meet current and anticipated public demand.

Alternative 4 would also increase the variety of undeveloped terrain by incorporating the South Bowl area into GTR's terrain network. Although to a lesser extent than the Proposed Action, the variety of expert terrain in South Bowl would better meet the expectations of guests and would support the purpose and need of providing additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails to enhance terrain variety and skiing experiences at GTR.

Visitation and Resort Capacity

Population growth in the county and region is expected to continue with current trends described under the No Action Alternative.

It is anticipated that upon implementation of projects included in Alternative 4, annual winter visitation growth rates at GTR would increase from baseline conditions (**Table 3.1-9**).

Table 3.1-9. Visitation Projections – Alternative 4

Season	Projects	Annual Visitation
2022/23	Colter Pod Opens with Lift Service	226,745 ²⁸
2023/24	-	249,330
2024/25	Shoshone Lift Upgraded/Papoose/Platter	247,342
2025/26	-	252,704
2026/27	Lift Installed in South Bowl	278,610
2027/28	-	284,839
2028/29	Crazy Horse Lift Installed	294,897
2029/30	-	294,897
2030/31	North Boundary Lift Installed	303,389
2031/32	-	303,389
2032/33	-	303,389

Source: SE Group 2021

Under Alternative 4, annual growth is anticipated to increase to approximately 3.0 percent on average between the 2022/23 and 2032/33 seasons once the proposed projects are implemented. Annual growth is expected to peak at 10 percent following the installation of the South Bowl Lift and steadily increase in following years. Visitation is expected to peak in the 2032/33 season at 303,389 visitors, an additional 38,047 visitors compared to peak visitation in the No Action alternative.

The installation of the proposed Lifts and upgrades under Alternative 4 would result in an increased CCC. Under Alternative 4, the CCC at GTR would increase from 3,720 guests per day to 5,480 guests per day. Although annual visitation and CCC would increase with Alternative 4, it is anticipated that the proposed upgrades and additions to terrain and facilities would accommodate these changes.

All summer projects proposed in Alternative 4 are the same as the projects included in the Proposed Action and Alternative 3 (refer to the Proposed Action discussion previously).

²⁸ 2022/23 is an actual annual visitation number as referenced in Table 3.1-2. Actual visitation was not available for any subsequent years at the time of reporting. Projections are based on best available data.

Facilities and Guest Services

All guest services proposed in the Proposed Action are also proposed in Alternative 4 except for the guest facility on Lightning Ridge. All facilities would accommodate the anticipated increase in CCC as a result of the projects proposed under Alternative 4.

Multi-Season Recreation

All multi-season recreation projects included in the Proposed Action are also included in Alternative 4. The recreation impacts and guest experience as a result of Alternative 4 would be consistent with those described under the Proposed Action.

Recreation in Surrounding NFS Lands

The recreation impacts as a result of the incorporation of South Bowl into the GTR SUP boundary would be consistent with the discussion under Proposed Action. The Mono Trees area would remain in its existing state with occasional dispersed recreation. Development of summer projects would result in trends similar to those described under the Proposed Action.

While recreationists on other NFS lands may not be displaced under this alternative, use patterns, particularly those related adjacent JSW lands could be impacted (refer to **Section 3.9**).

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Under Alternative 5, all projects within the SUP area as well as the SUP boundary expansion into Mono Trees are proposed. South Bowl would remain in its existing state.

Recreation in the GTR SUP Area

Terrain Network

Under Alternative 5, guests would have access to approximately 860 acres of developed ski terrain across a variety of ability levels. **Table 3.1-10** describes the impact the proposed trails within the GTR SUP area and proposed SUP expansion area would have on terrain distribution throughout the terrain network.

Table 3.1-10. Developed Terrain Network Distribution by Ability Level – Alternative 5

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Skier/Rider Distribution (%)	Skier Market (%)
Beginner	1.7	49.5	1	5
Novice	12.0	143.9	4	15
Low-Intermediate	36.5	291.8	8	25
Intermediate	287.3	1723.9	45	35
Advanced-Intermediate	276.5	1106.1	29	15
Expert	247.7	495.4	13	5

Total	861.7	3,811	100	100
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Source: SE Group 2022

With the additional Mono Trees terrain, Alternative 5 would result in an increase in the distribution of intermediate trails. The proposed projects would maintain the surplus of advanced-intermediate and expert terrain distribution. Beginner, novice, and low-intermediate terrain distribution would continue to be below the skier market, however, similar to the Proposed Action, Alternative 5 would still support the Purpose and Need by increasing intermediate and advanced-intermediate offerings as well as increasing beginner terrain acreage through improvement projects.

Including Mono Trees gladed terrain in GTR's undeveloped terrain network would also support the Purpose and Need of providing additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails to enhance terrain variety and skiing experiences at GTR. However, without the chutes and steep bowls offered in South Bowl, Alternative 5 does not provide the same variety of terrain as offered by the Proposed Action and Alternative 4.

Visitation and Resort Capacity

Population growth in the county and region is expected to continue with current trends described under the No Action Alternative.

It is anticipated that upon implementation of projects included in the Alternative 5, annual winter visitation growth rates at GTR would increase from baseline conditions. Refer to **Table 3.1-11** below for projected visitation as a result of Alternative 5.

Table 3.1-11. Visitation Projections – Alternative 5

Season	Projects	Annual Visitation
2022/23	Colter Pod Opens with Lift Service	226,745 ²⁹
2023/24	-	249,330
2024/25	Mono Trees Pod and Lift Constructed	273,063
2025/26	-	279,369
2026/27	Shoshone Lift Upgraded/Papoose/Platter	279,228
2027/28	-	282,459
2028/29	Crazy Horse Lift Installed	293,689
2029/30	-	290,043

²⁹ 2022/23 is an actual annual visitation number as referenced in Table 3.1-2. Actual visitation was not available for any subsequent years at the time of reporting. Projections are based on best available data.

2030/31	North Boundary Lift Installed	296,296
2031/32	-	304,304
2032/33	-	296,296

Source: SE Group 2021

Under Alternative 5, annual growth is anticipated to increase to approximately 2.8 percent on average between the 2022/23 and 2032/33 seasons once the proposed projects are implemented. Annual growth would remain higher than the normal trend following the installation of the Mono Trees, Crazy Horse, and North Boundary Lifts. Growth in visitation is expected to peak in the 2031/32 season at 304,304, an additional 38,962 skier visits compared to peak visitation in the No Action alternative.

The installation of the proposed lifts and upgrades would result in an increased CCC under Alternative 5. Under Alternative 5, the CCC at GTR would increase from 3,720 guests per day to 5,600 guests per day. Annual visitation and CCC would increase with Alternative 5 and it is anticipated that the proposed upgrades and additions to terrain and facilities would accommodate these changes.

All summer projects proposed in Alternative 5 are the same as the projects proposed in the Proposed Action. Refer to the discussion previously for recreation impacts to summer visitation.

Facilities and Guest Services

All guest services proposed in the Proposed Action are also proposed in Alternative 5 except for the ski patrol facility at the top of the South Bowl Lift, the vault toilet at the bottom of the South Bowl Lift, and associated avalanche mitigation infrastructure. The proposed facilities included in this alternative would accommodate the anticipated increase in CCC and provide a balanced resort experience.

Multi-Season Recreation

All multi-season recreation projects included in the Proposed Action are also included in Alternative 5. The recreation impacts and guest experience as a result of multi-season recreation in Alternative 5 would be consistent with those of the Proposed Action.

RECREATION IN SURROUNDING NFS LANDS

Alternative 5 is expected to have negligible impacts on recreation within the Mono Trees area due to its existing level of use. The South Bowl area would remain in its existing state as backcountry terrain and would continue to serve as a backcountry skiing destination. Development of summer projects would result in trends similar to those described under the Proposed Action.

While recreationists on other NFS lands may not be displaced under this alternative, use patterns, particularly those related adjacent JSW lands could be impacted (refer to **Section 3.9**).

3.1.5 Cumulative Effects

SCOPE OF THIS ANALYSIS

The effects analyzed in this discussion apply to all action alternatives. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the

GTR SUP area and on adjacent NFS and private lands, as well as throughout Teton County, Wyoming and Teton County, Idaho.

Temporal Bounds

The temporal bounds for this cumulative effects analysis of recreation resources extend from 1969 when GTR first opened as a ski area through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis of recreation primarily focuses on NFS lands within, and adjacent to, GTR's existing and proposed SUP area. However, the cumulative effects study area extends to include recreation opportunities within Teton County, Wyoming and Teton County, Idaho, some of which are on private lands.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the document. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment.

Recreation at GTR

This cumulative effects analysis analyzes the potential impacts of all projects in the 2018 MDP, including those that are not included in the Proposed Action. As these projects are accepted in the 2018 MDP but not approved under environmental review, they are considered here as reasonably foreseeable future projects. Included in the 2018 MDP but not in the Proposed Action are various lift upgrades and installments, additional guest services and ski area operations facilities, and additional snowmaking. Additionally, the Teton County, Wyoming GTR 2019 First Amended Master Plan – Planned Unit Development for Planned Resort (PUD-PR) was approved in 2019 and included private lands projects in the resort's base area. Approved but unimplemented projects from the First Amended Master Plan include construction of 450 units and 150,000 square feet of commercial and resort services.

On-mountain development and base area development combined are anticipated to make GTR more appealing as a destination resort. It is anticipated that if these projects are constructed, a greater number of guests would stay at the resort and their length of stays could also increase. These changes would allow GTR to remain competitive in the regional destination skier market, help retain existing guests, and attract new visitors.

In combination with previously accepted and approved projects that are reasonably foreseeable and past projects that have been implemented at GTR, the proposed projects in this EIS would supplement existing winter recreation opportunities by providing additional ski terrain and infrastructure. These additions would improve the existing terrain distribution and further the progression of summer recreation that has occurred in recent years by expanding summer offerings including developed activities within the Summer Activity Zone. It is anticipated that when combined with the recreation opportunities provided by past projects, the Proposed Action would have a combined beneficial impact on the recreation resource.

Recreation Opportunities beyond the GTR SUP Area

Beyond GTR and in the broader context of Teton County, Wyoming, opportunities for recreational activities are abundant on both private and public lands, including NFS, Teton County, and other municipal lands. Although summer is a short season in the mountain environment, summer recreational opportunities for different types of users outnumber winter recreational opportunities. These are primarily dispersed activities that depend on an individual's skills, fitness, and experience. They include, but are not limited to hiking, road/mountain biking, off-highway vehicle riding, sightseeing, fishing, camping, horseback riding, rock climbing, kayaking, and rafting. In addition to the hiking, biking, and multi-use trails that are available at GTR, hundreds of miles of trails can be found on NFS lands throughout the CTNF. Visitors of NFS lands outside of the GTR SUP area are also increasing due to population growth, the natural resources present, and array of dispersed activities that exist in the area.

Ongoing projects and visitor management show that this trend is occurring independent of additional recreation being provided at GTR. While ongoing recreation improvement projects, such as the Packsaddle Lake Recreation Improvement Project, work to mitigate the impacts that fall disproportionately on high use destinations, it is anticipated that additional visitors to the area could create future challenges for management and mitigation of impacts to high use destinations. In some cases, the additional recreation opportunities within the GTR SUP area may alleviate pressure on high use destinations by providing alternative opportunities for recreation in a location that is easier to manage due to its developed nature and existing infrastructure. However, when considered cumulatively with the growing population and visitation in the greater GTR area, it is anticipated that pressure on high use destinations would increase.

Cumulatively, the proposed projects at GTR could lead to an increase in use of recreation opportunities on NFS lands and municipally owned lands within Teton County, as enhanced recreational opportunities available within the GTR SUP would accommodate additional winter and summer visitors to the broader area. As such, it is likely that the Forest Service and local governments and organizations would continue to allocate resources to expand recreational offerings and address the management of exiting recreation opportunities in the foreseeable future.

3.1.6 Irreversible and Irretrievable Commitments of Resources

Development of additional lift-served terrain in the South Bowl and Mono Trees areas would represent irretrievable effects to backcountry recreation resources in these areas. However, the vegetation and ground disturbance required to provide lift-served skiing for the Proposed Action could be reclaimed and revegetated, thus restoring its backcountry characteristics during the winter season. Therefore, this commitment of the recreation resource is not considered irreversible in nature.

3.2 Scenery

This scenery analysis summarizes the [Scenery Technical Report](#) for the *Grand Targhee Resort Master Development Plan Environmental Impact Statement* (Scenery Technical Report).³⁰ Refer to the **Scenery Technical Report** for additional information, including a description of the methodology used for this analysis.

³⁰ SE Group 2023b

3.2.1 Scope of the Analysis

The spatial scope of this scenery analysis includes GTR's existing SUP area, as well as the proposed SUP area expansion onto adjacent CTNF lands, and critical viewpoint locations within 32 miles of the project area. 32 miles was chosen as project components would not be distinguishable from viewpoints at greater distances. The temporal scope of this scenery analysis extends from GTR's inception as a ski area in the 1960s, through the foreseeable future in which GTR can be expected to operate, allowing for analysis of existing and proposed conditions, as well as cumulative effects. This temporal scope was chosen as it covers the life of the ski resort, as well as the foreseeable future.

3.2.2 Federal, State, and Local Policy and Guidance

Management of the scenic environment on NFS lands within the analysis area is directed by the *1997 Forest Plan*, the Visual Management System (VMS), and the BEIG.

1997 FOREST PLAN FOR THE TARGHEE NATIONAL FOREST

The *1997 Forest Plan* contains Forest-wide standards and guidelines which apply to resources across the CTNF, as well as standards and guidelines which apply to specific Management Prescriptions.³¹ Refer to the *1997 Forest Plan* or the Scenery Technical Report for a description of relevant management direction from the *1997 Forest Plan*.

VISUAL MANAGEMENT SYSTEM

Since the mid-1970s, the Forest Service has utilized the VMS to measure the inherent visual quality of NFS lands.³² The Scenery Management System was published in 1995 and is the most recent Forest Service system for managing scenery resources; however, the *1997 Forest Plan* utilizes the VMS to measure and manage inherent visual quality. Existing visual quality and changes to this condition are measured and assessed through a number of indicators related to the characteristic landscape, distance zones, and viewer sensitivity levels. Refer to the Visual Management System National Landscape, Volume 2 and the Scenery Technical Report for additional information.

Visual Quality Objectives

Visual Quality Objectives (VQOs), as defined in the VMS, are based on the physical characteristics of the land and the sensitivity of the landscape setting as viewed by humans. VQOs define how the landscape will be managed, the level of acceptable alteration of the natural landscape in the area, and under what circumstance the alteration may occur under. VQOs range from *Preservation* (ecological changes only) to *Maximum Modification* (dominance of management activities). VQOs guide management of visual resources only on NFS lands.

³¹ A *standard* is a course of action which must be followed; adherence is mandatory. A *guideline* is a preferred course of action designed to achieve a goal, respond to variable site conditions, or respond to an overall condition.

³² U.S. Forest Service. 1974 (April). Chapter 1, "The Visual Management System." In National Forest Landscape Management, Volume 2. <https://www.nrc.gov/docs/ML1224/ML12241A372.pdf>

The 1997 Forest Plan assigns the GTR SUP area (Management Prescription 4.2 – *Special Use Permit Recreation Sites*) VQOs of *Partial Retention* to *Maximum Modification*.³³ In addition, the proposed SUP area expansions on adjacent CTNF lands in the South Bowl and Mono Trees areas (Management Prescription 2.1.2 – *Visual Quality Maintenance*) are currently assigned VQOs of *Retention* to *Partial Retention*. The 1997 Forest Plan designates riparian areas within the AIZ (Management Prescription 2.8.3 – *Aquatic Influence Zone*) VQOs of *Retention* to *Modification*. Management Prescription 2.8.3 – *Aquatic Influence Zone* overlaps portions of the GTR SUP area (Management Prescription 4.2 – *Special Use Permit Recreation Sites*) and the Mono Trees area (Management Prescription 2.1.2 – *Visual Quality Maintenance*). Areas of overlap within the GTR SUP area (Management Prescription 4.2 – *Special Use Permit Recreation Sites*) assume the VQO of Management Prescription 4.2 – *Special Use Permit Recreation Sites*, which is *Partial Retention* to *Maximum Modification*. Areas of overlap within the Mono Trees area (Management Prescription 2.1.2 – *Visual Quality Maintenance*) assume the VQO of the Management Prescription 2.8.3 – *Aquatic Influence Zone*, which is *Retention* to *Modification*. or the purpose of this analysis, these areas would assume the more conservative VQOs of the surrounding Management Prescription 2.1.2 – *Visual Quality Maintenance*, which are *Retention* to *Partial Retention*. Overall, much of the GTR SUP area would assume the VQOs of *Retention* to *Maximum Modification*, with portions of the GTR SUP area, Mono Trees area, and South Bowl area continuing to assume the more conservative VQOs of *Retention* to *Partial Retention*.

Refer to the 1997 Forest Plan, VMS, and the Scenery Technical Report for definitions for these VQOs.³⁴

BUILT ENVIRONMENT IMAGE GUIDE

The BEIG has been designed to ensure thoughtful design and management of the built environment, which includes above ground facilities: administrative and recreation structures, landscape structures, site furnishing, structures on roads and trails, and signs installed or operated by the Forest Service, its cooperators, and its permittees.³⁵ It focuses on the image, appearance, and structural character of facilities. Three core contexts are stressed throughout the BEIG: (1) environmental; (2) cultural; and (3) economic. Ecological, cultural, and economic contexts occur at various scales. In terms of context for the built environment, the Forest Service considers national, province, and site scales. GTR is located within the Rocky Mountain Province, which includes the northern Rockies, the Black Hills, and the Wasatch Range.

The BEIG provides general guidance regarding the image, aesthetics, and overall quality of recreational and administrative structures on NFS lands, but it does not contain enforceable “standards” pertaining to aesthetic quality as would be found in a typical Forest Plan. As indicated on pages 250–252 of the BEIG, specific direction for the design of administrative and recreational facilities is found in the FSM and

³³ USDA Forest Service. 1997. 1997 Revised Forest Plan for the Targhee National Forest. United States Department of Agriculture. Forest Service. Rocky Mountain Region. Caribou Targhee National Forest. Available online: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5395138.pdf

³⁴ U.S. Forest Service. 1974 (April). Chapter 1, “The Visual Management System.” In National Forest Landscape Management, Volume 2. <https://www.nrc.gov/docs/ML1224/ML12241A372.pdf>

³⁵ USDA Forest Service. 2001. The Built Environment Image Guide for the National Forests and Grasslands. United States Department of Agriculture. Forest Service. September 2001. Available online: https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/TheBuiltEnvironmentImageGuide-2001-09.pdf

Forest Service Handbooks (FSH).³⁶ Refer to the BEIG and the **Scenery Technical Report** for additional information.

3.2.3 Affected Environment

REGIONAL CHARACTERISTIC LANDSCAPE

GTR is located on the west side of the Teton Mountain Range within the CTNF, outside Alta, Wyoming. The CTNF occupies over 3 million acres of NFS lands stretching across southeastern Idaho, from the Montana, Utah, and Wyoming borders. Elevations in the CTNF range from approximately 5,000 feet in the Curlew National Grassland to over 12,000 feet on the Forest's western reaches in the Lemhi Range. Two designated wilderness areas, the JSW and the Winegar Hole Wilderness, are located in the easternmost portions of the Forest, which border Yellowstone and GTNP. The Grand Teton, an important scenic resource located within GTNP, is approximately 8 miles southeast of the ski area.

Jedediah Smith Wilderness

The JSW, a federally designated wilderness area that is managed by the Forest Service, borders the GTR SUP boundary to the north (refer to **Figures 7 and 8**). The topography found within the JSW is very similar to the topography found at GTR; the landscape is characterized by steep, granite cliffs separated by heavily vegetated valleys. The JSW represents an undeveloped area and is particularly valued for its unrefined, scenic characteristics. No development associated with the project would occur on JSW land; however, portions of the project would be visible from these lands. The JSW offers excellent opportunities for backcountry skiing in the winter, but experiences much lighter use compared to the warmer months because of its remote location and the fact that the area is not immediately lift-served, but rather requires hiking to access.

Grand Teton National Park

GTNP is a federally designated national park, managed by the National Park Service (NPS) in northwestern Wyoming. GTNP borders the CTNF to the east and is approximately 8 miles east of GTR. GTNP contains the major peaks of the Teton Range, including the Grand, Middle, and South Tetons, Teewinot Mountain, Mount Moran, and Buck Mountain. Portions of GTNP on the west side of the Teton Range are visible from GTR (refer to **Figures 7 and 8**). Likewise, GTR is visible from within GTNP from some summits and trail viewpoints. The topography found on the west side of the Teton Range within the GTNP is similar to the topography found within the JSW. The area also contains jagged peaks and ridgelines, as well as glacial valleys and alpine meadows. Lands within GTNP on the west side of the Teton Range are largely undeveloped, especially when compared to areas within the park on the eastern side of the range, which contain most of the park's visitor facilities, as well as the Jackson Hole Airport. Lands within GTNP on the west side of the Teton Range are largely undeveloped and are particularly valued for their unrefined, scenic characteristics. The area is mostly void of infrastructure and human disturbance, except for hiking trails. Most viewers from GTNP are hikers that generally have a high sensitivity toward a natural appearing and undeveloped landscape.

³⁶ Ibid.

GTNP was established as a unit of the National Park System to protect the scenic and geological values of the Teton Range and Jackson Hole, and to perpetuate the park's indigenous plant and animal life.³⁷ Scenic quality is a high priority in all management decisions made by the NPS for GTNP. GTNP is also managed to maintain its dark sky values, as dark skies are important to provide refuge for wildlife and to provide clarity for visitors engaging in stargazing, night walks, full moon hikes, and other nighttime activities. Western views from GTNP are largely unimpacted dark sky.

Driggs, Idaho

The City of Driggs is located in Teton County, Idaho, approximately 14 miles southwest of GTR. Driggs is situated in the Teton Valley between the western front of the Teton Range and the Big Hole Mountains. Views of the Teton Range, including the Grand, Middle, and South Tetons, and GTR, exist to the east. While the base area of GTR is masked by topography, both Fred's Mountain and Peaked Mountain are visible from Driggs, as well as the ski run on these mountains. Views of the Big Hole Mountains exist to the southwest.

In 2012, Driggs adopted community zoning standards to designate the city as an International Dark Sky Community.³⁸ The intent of the initiative was to provide for the nighttime use and enjoyment of property while serving the greater public interest; to benefit public health, safety, and security; to foster natural-resource protection; and to promote community aesthetics.

PROJECT AREA CHARACTERISTIC LANDSCAPE

Existing Grand Targhee Resort Special Use Permit Area

The summit elevation of GTR is approximately 9,920 feet at the top of Mary's Nipple. GTR has a base elevation of approximately 7,860 feet. The topography and vegetation of the ski areas are composed of steep mountain slopes and basins at higher elevations, and valleys of conifer forests intersected by base area developments at lower elevations. Ski area development, including ski runs, lifts, and other infrastructure, is highly apparent from within the ski area and from surrounding NFS lands. This type of development is particularly visible when viewed from the foreground distance zone; however, it is also visible in the middleground, and background distance zones (when not obstructed by existing vegetation or topography). Ski runs are much more visible from the middleground and background distance zones than ski lift infrastructure because ski runs require the wholesale clearing of vegetation, which creates considerable contrast with the adjacent and undisturbed natural landscapes. This contrast is particularly apparent during the winter when white snow-covered runs are surrounded by darker-colored trees and forest stands. Ski lift infrastructure is minimally visible from the middleground distance zone and is generally not noticeable from the background distance zone, because at these distances, installed infrastructure does not create substantial contrast with the surrounding and undisturbed landscape, and as a result is hardly discernable.

³⁷ USDI National Park Service 1976. Grand Teton National Park Master Plan.

³⁸ City of Driggs. 2022. Zoning Ordinance. Land Development Code of Driggs, Idaho. Chapter 11 Site Development. Art. 11.4. Outdoor Lighting. 11.4.1 Purpose. Available online: https://codelibrary.amlegal.com/codes/driggsid/latest/driggszoning_id/0-0-0-3155

While the line and form of existing ski trails and installed infrastructure with the SUP area both contrast noticeably with natural landscape characteristics, they are not inconsistent with the Partial Retention VQO because they do not dominate the characteristic landscape and are therefore visually subordinate to it.

South Bowl

South Bowl is located on NFS lands south of the GTR SUP area (refer to **Figures 7 and 8**). As an undeveloped area outside GTR's existing SUP area and adjacent to the JSW, South Bowl exists in a near natural state. The area is broadly defined by above-treeline bowls, cliff bands, chutes, and ridgelines, which transition into forest below approximately 9,000 feet. Defined avalanche paths cut into treeline below many of the chutes in this area, creating repeated, asymmetrical lines of variable thickness in forested areas below treeline. These areas are particularly apparent during the winter when white snow-covered slide paths are surrounded by darker-colored trees and forest stands. Forested areas in the southwestern portion of South Bowl are low density with numerous down trees lining the understory. The area is void of infrastructure and human disturbance except for a short trail segment extending approximately 300 feet into South Bowl from the western edge of the GTR SUP boundary. While the trail is located in an open area above treeline, management activities associated with the trail are hardly noticeable compared to the natural features that make up the greater landscape.

South Bowl is currently consistent with the assigned VQOs of Retention to Partial Retention, as management activities are not visually evident.

Mono Trees

The Mono Trees area is located on NFS lands downslope and to the west of the GTR SUP area (refer to **Figures 7 and 8**). Mono Trees exists in a near natural state, characterized by below treeline forest stands of varying density, interspersed with subalpine meadows. Mono Trees is primarily west-facing with more gentle slopes when compared to the terrain in South Bowl. Forests within the Mono Trees area are primarily mixed conifer, with some aspen at lower elevations. The area is mostly void of infrastructure and human disturbance, except for an approximately 1,300-foot segment of Ski Hill Road in the area's northern corner and an approximately 5,000-foot mountain road that cuts through forest along the area's southern edge.

Mono Trees is consistent with the assigned VQOs of Retention to Partial Retention. Management activities are not visually evident within Mono Trees, except for Ski Hill Road and the existing mountain road which are subordinate to the visual strength of the characteristic landscape.

VIEWPOINT ANALYSIS

For this analysis, nineteen critical viewpoint locations and 23 views (some occurring during the day and night) have been considered to provide a representative sampling of the views within the study area (refer to **Figures 7 and 8**). Four of these (including the Coulter Building top floor and Hastings Lane in Driggs, Idaho; Table Mountain in the JSW; and one site in Teton, Idaho) experience widely varying conditions between the winter and summer months. As a result, these four viewpoint locations were considered during both summer and winter conditions, which resulted in a total of 23 views being considered for detailed viewpoint analysis (i.e., 4 of the 19 viewpoints have both a summer view and a winter view provided from the same location).

The viewpoints were overlayed with the Zone of Potential Visibility defined in the viewshed analysis (refer to **Section 1.3.1** of the **Scenery Technical Report**) to determine whether the proposed projects would be visible or discernable from each location. Viewpoints screened by topography were dismissed from additional analysis as visual impacts associated with the proposed projects would not be visible. Existing and proposed ski area infrastructure would not be discernable from viewpoints outside the 6.9-mile buffer area from the proposed top and bottom terminals of South Bowl Lift and the proposed Fred's Mountain Top Guest Facility; however, cleared ski trails would be visible in many instances. The 6.9-mile buffer area was chosen as the buffer distance as the limit a person with 20/20 vision could not recognize a lift terminal or building on the landscape. This 6.9 mile buffer is characterized as the Zone of Potential Visibility. The existing condition for each discernable view is described in the following paragraphs. Views where visual impacts would not be visible (views 1 – Ashton, Idaho, 2 – Buck mountain Pass, and 12 – Paintbrush Divide) have been omitted from this section, but are discussed in **Section 1.4.3** of the **Scenery Technical Report**. Numeric viewpoint locations are presented in **Figures 7 and 8**.

Views 3 and 4 – Coulter Building Rooftop, Driggs, Idaho (Summer and Winter)

The Coulter Building is a three-story structure with a rooftop restaurant in Driggs, Idaho. The building is located approximately 10 miles southwest of the GTR SUP. The viewpoint looks to the northeast and provides views of the Teton Range and GTR in the background distance zone (refer to **Figures 7 and 8**). Existing ski trails at GTR are visible from this viewpoint; however, ski area infrastructure is not discernable due to distance. During the summer, the ski trails exhibit little contrast with the surrounding vegetation and are hardly discernable compared to winter, when snow-covered ski trails contrast with the surrounding green vegetation. Most of the viewers at this location would be guests of the Coulter Building restaurant, and the duration of their view would likely range from minutes to hours, depending on guests' activities.

View 5 – Grand Teton Summit

The Grand Teton is located within GTNP, approximately 6.5 miles southeast of the GTR SUP area. The Grand Teton Summit viewpoint looks northwest towards Fred's Mountain and South Bowl (refer to **Figures 7 and 8**). In the background, viewers can see the top of Fred's Mountain as well as avalanche paths and scattered vegetation in South Bowl. Ski Hill Road and Teton Canyon Road are the only development visible from this viewpoint. Technical rock-climbing gear and skills are required to access the Grand Teton Summit; therefore, all viewers at this location would be rock climbers. The duration of their view would likely last several minutes, depending on climbers' ascent speed; these climbers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

Views 6 and 7 – Hastings Lane, Driggs, Idaho (Summer and Winter)

Hastings Lane is located in Driggs, Idaho, approximately 8.4 miles west of the GTR SUP area. The Hastings Lane viewpoint faces east towards the Teton Range and GTR, and has clear views of the Grand, Middle, and South Tetons in the background distance zone. Existing ski trails at GTR are visible from this viewpoint; however, ski area infrastructure is not discernable due to distance. During the summer, ski trails exhibit little contrast with the surrounding vegetation and are hardly discernable compared to winter, when snow-covered ski trails contrast with the surrounding green vegetation. Most of the viewers at this location would be driving or biking and would experience this view for only several seconds, depending on mode of travel.

View 8 – Hurricane Pass

The Hurricane Pass is located within GTNP, approximately 4.5 miles southeast of the GTR SUP area. The Hurricane Pass viewpoint looks northwest, down the Roaring Creek drainage into Teton Canyon. In the background, viewers can see the top of Fred's Mountain as well as avalanche paths and scattered vegetation in South Bowl. Ski Hill Road and Teton Canyon Road are the only development visible from this viewpoint. Hurricane Pass is accessed via the Teton Crest Trail and South Fork Cascade Creek Trail, therefore, most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 9 – Lower Saddle Between the Middle and Grand Tetons

The lower saddle between the Middle and Grand Tetons is located within GTNP, approximately 6 miles southeast of the GTR SUP area. The Lower Saddle viewpoint looks northwest towards Table Mountain, Fred's Mountain, and South Bowl. In the background, viewers can see exposed granite peaks, avalanche paths, and scattered vegetation above treeline. Teton Canyon Road is the only development visible from this viewpoint. The Lower Saddle viewpoint is accessed via the Garnet Canyon to The Lower Saddle Trail, therefore, most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 10 – Middle Teton Summit

The Middle Teton is located within GTNP, approximately 6 miles southeast of the GTR SUP area. The Middle Teton viewpoint looks northwest towards Table Mountain, Fred's Mountain, and South Bowl. In the background, viewers can see the top of Fred's Mountain as well as avalanche paths and scattered vegetation in South Bowl. Teton Canyon Road is the only development visible from this viewpoint. The Middle Teton viewpoint is accessed via the Garnet Canyon trail, therefore, most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 11 – Mount Meek Pass

The Mount Meek Pass is located within GTNP, approximately 6 miles southeast of the GTR SUP area. The Mount Meek Pass viewpoint is located southeast of the Mount Meek summit and looks northwest towards Fred's Mountain, and South Bowl. In the background, viewers can see the top of Fred's Mountain as well as avalanche paths and scattered vegetation in South Bowl. No development whatsoever is visible from this viewpoint. The Mount Meek Pass viewpoint is accessed via the Teton Crest trail, therefore, most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 13 – Teton Canyon Overview Observation Site

The Teton Canyon Overview Observation Site is located on Ski Hill Road, approximately 3.5 miles southwest of the GTR SUP area and is a popular viewpoint and photography area. The Teton Canyon Overview Observation Site viewpoint looks east towards the Teton Range and provides views of Peaked Mountain and the Mono Trees area in the middleground, as well as the Grand, Middle, and South Tetons

in the background. The Teton Canyon Overview Observation Site is located in a forested area and views of Peaked Mountain and the GTR SUP area are largely obstructed by vegetation in the foreground and middleground. Ski Hill Road is the primary development visible from this viewpoint and ski area infrastructure is not entirely visible. Most of the viewers at this location would be on foot and the duration of their view would likely last several minutes; these viewers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint. Other viewers at this location would be driving or biking and would experience this view for only several seconds, depending on the mode of travel.

View 14 – South Leigh Lakes

The South Leigh Lakes are located within the JSW, approximately 2.5 miles east of the GTR SUP area. The South Leigh Lakes viewpoint is located south of the uppermost lake and looks west towards the ridge extending from Peaked Mountain to Fred's Mountain. In the middleground, viewers can see the top of Fred's Mountain. No development whatsoever is visible from this viewpoint. The South Leigh Lakes viewpoint is accessed via the South Leigh Creek, Granite Basin, Green Lakes Loop, therefore, most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 15 – South Teton/Devil Stairs Trails

The South Teton/Devil Stairs Trails are located within the JSW, approximately 3.5 miles east of the GTR SUP area. The South Teton/Devil Stairs Trails viewpoint is located at the intersection of South Teton and Devil Stairs Trails and looks northwest towards South Bowl. In the background, viewers can see avalanche paths and scattered vegetation in South Bowl. Most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 16 – Static Peak

The Static Peak is located within GTNP, approximately 8 miles southeast of the GTR SUP area. The Static Peak viewpoint is located 1,000 feet east of Alaska Basin Trail on the summit of Static Peak and looks northwest towards Battleship Mountain, Peaked Mountain, and Fred's Mountain. In the background, viewers can see the top of Fred's Mountain and Peaked Mountain. Views of South Bowl are mostly obstructed by Battleship Mountain; however, some alpine areas at the top of the bowl are visible. No development whatsoever is visible from this viewpoint. Most viewers at this location are hikers. The duration of their view would likely last several minutes, depending on hikers' ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

Views 17 and 18 – Table Mountain, Jedediah Smith Wilderness (Summer and Winter)

Table Mountain is located within the JSW, approximately 3 miles east of the GTR SUP area. The Table Mountain viewpoint is located on the ridge that extends west from the Table Mountain summit. The viewpoint looks northwest towards Fred's Mountain and South Bowl (refer to **Figures 7 and 8**). In the middleground, viewers can see the top of Fred's Mountain as well as avalanche paths and scattered vegetation in South Bowl. Ski Hill Road and Teton Canyon Road are visible in the background distance zone. During the summer, cleared avalanche paths in South Bowl exhibit little contrast with the

surrounding vegetation and are hardly discernable compared to winter, when snow-covered avalanche paths contrast with the surrounding green vegetation and are visible from the Table Mountain viewpoint. Most of the viewers at this location would be hiking in the summer or backcountry skiing in the winter and would experience this view for only several seconds, depending on the mode of travel.

View 19 – Teewinot Mountain

Teewinot Mountain is located within GTNP, approximately 7.5 miles east of the GTR SUP area. The Teewinot Mountain viewpoint is located on the summit of Teewinot Mountain and looks west, providing views of the tops of Fred’s Mountain, Peaked Mountain, and Mary’s Nipple in the background distance zone. Ski area infrastructure is not discernable in these areas due to distance. Views of South Bowl are mostly obstructed by Mt. Owen, which is located in the immediate foreground; however, some alpine areas at the top of the South Bowl are visible. Most viewers at this location are advanced hikers. The duration of their view would likely last several minutes, depending on hikers’ ascent speed; these hikers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

View 20 – Teton Scenic Byway

Teton Scenic Byway viewpoint is located to the east of the intersection with Highway 32, outside of Teton, Idaho. The viewpoint is approximately 12.5 miles northwest of the GTR SUP area. The Teton Scenic Byway viewpoint faces southeast towards the Teton Range and GTR, and has clear views of the Grand, Middle, and South Tetons in the background distance zone. Existing ski trails at GTR are visible from this viewpoint; however, ski area infrastructure is not discernable due to distance. Most of the viewers at this location would be driving or biking and would experience this view for only several seconds, depending on the mode of travel.

Views 21 and 22– Teton, Idaho (Winter and Summer)

Teton, Idaho viewpoint is also located on the Teton Scenic Byway, approximately 0.5 mile southeast of Teton, Idaho. The viewpoint is approximately 11 miles west of the GTR SUP area. The viewpoint faces east towards the Teton Range and GTR, and has clear views of the Grand, Middle, and South Tetons in the background distance zone. Existing ski trails at GTR are visible from this viewpoint; however, ski area infrastructure is not discernable due to distance. During the summer, ski trails exhibit little contrast with the surrounding vegetation and are hardly discernable compared to winter, when snow-covered ski trails contrast with the surrounding green vegetation. Most of the viewers at this location would be driving or biking and would experience this view for only several seconds, depending on the mode of travel.

View 23 – Teton Canyon Campground

The Teton Canyon Campground viewpoint is located on NFS lands, approximately 1 mile east of the GTR SUP area. The viewpoint faces north towards South Bowl and the GTR SUP area; however, it is largely blocked by topography and vegetation. The Teton Canyon Campground is a popular camping destination in the area and requires a reservation. During the summer, campground reservations are often booked out several months in advance. Most viewers at this location are campers. The duration of their view would last several hours or days, depending on camper’s length of stay. These campers generally have a high sensitivity toward the natural appearing and undeveloped landscape visible from this viewpoint.

Additionally, the Teton Canyon Campground is often used as a starting point for hikers embarking on trails in the surrounding area. Many of these hikers are likely to travel to other viewpoints included in this analysis such as South Teton/Devil Stairs Trails (view 15), and Table Mountain (views 17 and 18). Most of the viewers at this location would be hiking in the summer or backcountry skiing in the winter and would experience this view for only several seconds, depending on the mode of travel.

3.2.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION

Under the No Action Alternative, no projects would be implemented, meaning the existing landscape would remain unchanged. No changes or modifications potentially affecting the scenic quality of GTR's SUP area or adjacent CTNF lands would occur. The proposed SUP area expansions would continue to meet the established VQO of *Retention to Partial Retention*. Refer to the Viewpoint Analysis section for a description of the existing visual conditions from the critical viewpoints.

ALTERNATIVE 2 – PROPOSED ACTION

Existing Grand Targhee Resort Special Use Permit Area

The GTR SUP area is primarily visible from surrounding areas to the west including views 3, 4, 6, 7, 13, 20, 21, and 22. Collectively, the proposed Fred's Mountain Top Guest Facility, lifts, ski terrain, and other projects within the GTR SUP, would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) distance zones. Impacts from the proposed projects within the existing SUP area are described in detail in the following discussions.

Fred's Mountain Top Guest Facility

The proposed Fred's Mountain Top Guest Facility would be approximately 11,000 square feet in size and would be located on top of Fred's Mountain, south of the existing Dreamcatcher Lift top terminal. Fred's Mountain Top Guest Facility is proposed to have simple, linear forms, natural colors, and utilize low-reflective materials to blend with the surrounding environment. Upon site review prior to project implementation, the facility would comply with the BEIG guidelines. Final design of the facility would be reviewed and approved by a specialized BEIG Forest Service representative to minimize impacts to the scenery resource.

The top of Fred's Mountain is visible from surrounding areas to the east and west of the GTR, including views 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, and 22 (refer to **Figure 8**). However, the proposed Fred's Mountain Top Guest Facility would be indiscernible from views 3, 4, 6, 7, 16, 19, 20, 21, and 22 as they are outside the Zone of Potential Visibility due to distance. The facility would be visible from views 5, 8, 9, 10, 11, 12, 13, 14, 17, and 18. Visual simulations have been created from the Grand Teton Summit (view 5) and Table Mountain (view 17) to approximate visual impacts associated with implementation of Fred's Mountain Top Guest Facility (refer to the **Scenery Technical Report**).

The proposed facility would result in an incremental addition to a largely developed landscape when viewed from foreground, and middleground (view 13), and background distance zones to the west of GTR. The proposed restaurant may be visible from the Teton Canyon Overview Observation Site (view 13); however, given the popularity of GTR as a destination ski area, it can be reasonably assumed that most visitors expect to encounter developed recreation infrastructure within the viewshed. Most viewers

from this location would be driving or on foot and the duration of their view would likely last several seconds to several minutes.

The proposed facility would result in an incremental addition to a largely undeveloped landscape when viewed from middleground (views 14, 17, and 18) and background distance zones within the JSW. Scenic impacts would be greatest from South Leigh Lakes (view 14), which is approximately 2.5 miles east of the top of Fred's Mountain. As illustrated in the visual simulation from Table Mountain (view 17), which is approximately 3.5 miles from the top of Fred's Mountain, the proposed projects are hardly visible (refer to Figures 11a and 11b), altering approximately 1.3 percent of the overall view. Impacts would be similar, but even less noticeable from background (views 5, 8, 9, 10, 11, and 12) distance zones within GTNP, as illustrated in the visual simulation from the Grand Teton Summit (view 5). The proposed projects would alter approximately 0.1 percent of the overall view from this viewpoint. Most viewers from these locations would be hikers and the duration of their view would likely last several minutes. While impacts would be minor from the aforementioned views, with adherence to PDC identified in **Table 2-1**, ski area activities would remain visually subordinate to the visual strength of the characteristic landscape. The Fred's Mountain Top Guest Facility would result in minor decreases in the scenic integrity of surrounding lands within the JSW and negligible decreases within GTNP.

Collectively, the proposed facility is not expected to increase visual resource impacts such that the area would not meet its VQO designation of *Partial Retention* to *Maximum Modification*. Therefore, maintenance of the VQOs would be achieved. Please refer to the **Scenery Technical Report** for more information.

Night Lighting and Glare

Fred's Mountain Top Guest Facility is proposed for daytime use only and there would be no nighttime use in the future. Closure of this facility would be no later than an hour past NOAA's listed sunset time. Through the implementation of specific PDC, future nighttime use of this facility would be subject to additional NEPA review and cannot be permitted via changes in the operating plan. There would be no major night lighting associated with the proposed project; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations, which would primarily occur in the early morning. Implementation of the proposed lighting is not anticipated to be visible from surrounding views beyond the foreground.

Construction of the proposed Fred's Mountain Top Guest Facility would result in a limited amount of glare during certain times of day, depending on angle of the sun, amount of cloud cover, and position of the viewer. These ephemeral impacts may be visible from views 5, 8, 9, 10, 11, 12, 13, 14, 17, and 18. Due to the angle of sun, glare would be most evident in the evening when viewed from the west and in the morning when viewed from the east for Forest visitors that are below the building. Impacts would be greatest when the sun is directly aligned with smooth materials and windows on the proposed facility. This would result in temporary scenic impacts when viewed from locations within the angle of reflectivity. The implementation of PDC would ensure that the facility meets solar reflectivity standards and minimizes visual impacts associated with reflectivity from installed infrastructure; the facility would be built with design elements that break up form, line, and texture to minimize reflectivity. Through the use of PDC, the ephemeral impact of reflective surfaces would be nominal and would not be noticeable to the casual observer.

Lifts and Lift Replacement within the Existing Special Use Permit Area

The Proposed Action includes numerous lift projects within the existing SUP area such as the construction of the Crazy Horse Lift, North Boundary Lift, Palmer's Platter, the Papoose carpet upgrade, and the Shoshone Lift replacement. The GTR SUP area is most visible from views to the west, including views 3, 4, 6, 7, 13, 20, 21, and 22. The proposed lifts would be indiscernible from views 3, 4, 6, 7, 20, 21, and 22, as they are outside the Zone of Potential Visibility due to distance (refer to **Figure 8**); however, tree clearing for proposed lift corridors would be visible. This is illustrated in the visual simulation from the Coulter Building Rooftop (**Figures 9a and 9b**).

The proposed lifts may be visible from foreground, middleground (view 13), and background views within and adjacent to GTR. Lift infrastructure and associated tree clearing and grading would contribute additional form, line, color, and/or texture to the landscape, which is currently dominated by ski area management activities. Through the implementation of specific PDC, the proposed chairlift terminals and towers would be colored to maximize blending with the surrounding summer landscape. Construction of the chairlifts would require corridors of variable width to be created through the forest canopy; however, much of the corridors would be located in existing ski trails and unvegetated areas. The proposed lift corridors would be visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) distance zones west of the GTR SUP area. PDC for the lift lines would minimize the negative scenic effect of linear chairlift corridors by creating larger openings in key locations to better blend into the surrounding landscape when viewed in winter. A complete list of PDC for scenery resources is identified in **Table 2-1**. Collectively, the proposed lift projects, coupled with the proposed guest facilities, ski terrain, and other projects within the GTR SUP, would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) distance zones. The proposed lifts are not expected to increase visual resource impacts to the character of the GTR SUP area, such that it would not meet the VQO of *Partial Retention to Maximum Modification*. Please refer to the **Scenery Technical Report** for more information.

Night Lighting and Glare

Lights are proposed on *Palmer's Raceway* in conjunction with the proposed Palmer's Platter surface lift. The lights would enable nighttime training sessions for athletes during the winter months. Lighting fixtures may be visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) views to the west of the SUP area. Visibility of night lighting fixtures would not constitute a considerable change from current settings, including Dark Sky conditions in Driggs, as *Palmer's Raceway* is located adjacent to the GTR base area, which is already heavily developed and well lit. Night lighting on Palmer's Raceway would not be visible from GTNP.

Construction of the proposed lift terminals and operator buildings would result in a limited amount of glare in the evenings when viewed from the west. These ephemeral impacts may be visible from views 3, 4, 6, 7, 13, 20, 21, and 22. Impacts would be greatest when the sun is directly aligned with smooth materials and windows (lift operator buildings for some lift terminals depending on view angle and gondola cabins on Dreamcatcher Lift) on the proposed infrastructure. This would result in temporary scenic impacts when viewed from locations within the angle of reflectivity. The implementation of PDC would ensure that the infrastructure meets solar reflectivity standards and minimizes visual impacts associated with reflectivity from installed infrastructure; the lifts would be built with certain materials and given certain colors that minimize reflectivity. Through the use of PDC, the ephemeral impact of reflective surfaces would be nominal and would not be noticeable to the casual observer.

Ski Terrain

The Proposed Action includes the construction of new ski trails, terrain improvements, and glading throughout the existing SUP boundary. The proposed ski terrain would be most visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) distance zones to the west of the GTR SUP area.

Developed ski trails have been designed with consideration for aesthetic resources. Where ski trails would be fully cleared of vegetation, trail edges would be feathered or scalloped to provide a variable line, thereby minimizing linear cuts in overstory vegetation. Larger inter-trail tree islands would be maintained to minimize the impact of cleared trails. Cleared ski trails would create contrast with the adjacent and undisturbed natural landscapes; however, they would be located within the existing developed trail network or otherwise near existing ski area infrastructure. As the existing developed trail network is most visible from the west and northwest, the proposed ski trails would likely be viewed as in an incremental addition to the existing trail network when seen from foreground, middleground (view 13), and background views (views 6, 7, 20, 21, and 22) in this direction. This would not result in a major change to the aesthetic character of the landscape. Conversely, when viewed from the southwest near the City of Driggs (views 3 and 4), the existing trail network is much less visible except for the upper portions of existing ski trails on Peaked Mountain. As illustrated in the visual simulation for the Coulter Building Rooftop (**Figures 9a and 9b**), the proposed ski trails would introduce form, line, and texture which is found infrequently in the characteristic landscape. The proposed ski trails would alter approximately 0.4 percent of the overall view from this viewpoint. This would change the aesthetic of this portion of the ski area when viewed from this direction; however, the trails would remain subordinate to the visual strength of the characteristic landscape. The trails would be more apparent during the winter when white snow-covered runs are surrounded by darker-colored trees and forest stands. These impacts would be noticeable from views 4, 7, and 22 where snow-covered ski trails are currently visible from background views of the GTR SUP area and the Teton Range during the winter. PDC have been incorporated into the Proposed Action to reduce the scenic impacts associated with the proposed ski trails (refer to **Table 2.4-1**).

Grading would be required to accommodate the trail construction and improve the skiability of existing trails. Vegetation and soils disturbed by grading would be stockpiled and revegetated immediately after construction; however, due to soil types and harsh growing conditions at altitude, these soils would likely appear lighter than surrounding sediments even following revegetation, which would add a permanent contrasting color to the existing landscape character. Scenic impacts associated with the proposed grading would be most evident in the summer from foreground, middleground (view 13), and background (views 3, 6, 20, and 21) distance zones to the west of the GTR SUP area. PDC have been incorporated into the Proposed Action to minimize scenic impacts associated with the proposed grading to the greatest extent feasible (refer to **Table 2.4-1**).

Lastly, the proposed glades would have some impact on scenic resources, as approximately 40 percent of trees would be removed. This tree removal would modify the color and texture composition of forested areas within this terrain; however, this clearing would not be homogenous and linear cuts in overstory vegetation would be minimized. Scenic impacts associated with the proposed glading would be most evident from foreground, and middleground (view 13) distance zones to the west of the GTR SUP area; however, PDC have been incorporated into the Proposed Action to reduce the degree of scenic impacts associated with the proposed glading (refer to **Table 2.4-1**).

The proposed ski terrain, coupled with the proposed guest facilities, lifts, and other projects within the GTR SUP area, would result in incremental additions to the existing developed landscape when viewed from foreground, middleground (view 13), and background (views 6, 7, 20, 21, and 22) distance zones to the west and northwest of the GTR SUP area. Scenic impacts of the proposed ski terrain would be more apparent when viewed from the southwest near the City of Driggs (views 3 and 4), as the existing trail network is less visible. Depending on the what the viewer is doing, the duration of their view would likely range from minutes to hours; however, given the popularity of GTR as a destination ski area, it can be reasonably assumed that most viewers expect to encounter developed recreation infrastructure within the viewshed. With adherence to PDC, identified in **Table 2.4-1**, the proposed ski terrain projects are not expected to increase visual resource impacts to the character of the existing SUP area, such that it would not meet the VQO of *Partial Retention to Maximum Modification*. Please refer to the **Scenery Technical Report** for more information.

Other Projects

Other projects within the existing SUP area, including the proposed access roads and upgrades, summer recreation trails and activities, alternative winter activities, and small on-mountain facilities would contribute additional visual impacts; however, they would be less noticeable due to their size and locations. These projects may be visible from foreground, middleground (view 13), and background distance zones when viewed from the west of the GTR SUP area.

The proposed access roads, hiking trails, mountain biking trails, fat bike trails, and Nordic trails would require vegetation removal and grading, which could result in impacts to scenic character within the GTR SUP area. Disturbed areas surrounding the road and trail treads would be revegetated. The most visible roads and trails would be in existing ski trails, which lack natural screening provided by tree islands. Projects within existing ski trails would result in minor scenery impacts in the foreground, middleground (view 13), and background distance zones from portions of the GTR SUP area and adjacent NFS lands.

Proposed small on-mountain facilities include the Sacajawea Restaurant and Guest Facility, the Shoshone Guest Facility, the Rick's Basin Guest Facility, and the Lightning Ridge Guest Facility. The facilities would have simple, linear forms to blend with the surrounding environment and would comply with the BEIG. The Sacajawea Restaurant and Guest Facility and the Shoshone Guest Facility would be most notable, as they would be located at treeline; however, the structures would incorporate suitable massing and scale to relate to the surrounding landscape. The Rick's Basin and Lightning Ridge Guest Facilities would be located below treeline and would be screened by vegetation to reduce visual impacts.

The proposed facilities would be apparent at foreground, middleground (view 13), and background distance zones; however, they would be subordinate to natural landscape features, existing ski area infrastructure, and cleared ski trails. The facilities would be indiscernible from views 3, 4, 6, 7, 20, 21, and 22, as they are outside the Zone of Potential Visibility due to distance (refer to **Figure 8**). This is illustrated in the visual simulation prepared for The Coulter Building Rooftop (**Figures 9a and 9b**), in which none of the facilities and infrastructure are discernable.

Remaining projects within the existing SUP area that have potential visual impacts include summer activities such as the canopy tour/fly line, zipline, and aerial adventure course, as well as alternative winter activities such as the snowtubing facility. These projects would be located adjacent to the GTR base area and/or within the Summer Activity Zone allocated for concentrated activities in the accepted 2018 Master Development Plan. The proposed summer activities would be designed to integrate into the

existing forest canopy and would require minimal overstory vegetation clearing. Structures would consist of wooden and/or natural-looking materials to the extent possible, with the exception of support cables and ziplines, which would have minimal visibility due to their small size. Additionally, the proposed snowtubing facility would be located in a previously disturbed area within the GTR base area, and would require grading and tree clearing, which could result in additional scenery impacts. All summer and alternative winter activities would be designed to blend with the environment and would meet the intent and relevant guidelines of the [BEIG](#). These projects, coupled with the proposed guest facilities, lifts, and ski terrain, would increase the developed nature of the landscape via minor and incremental changes in the foreground, middleground (view 13), and background distance zones when viewed from the west.

Night Lighting and Glare

The proposed snowtubing facility includes lighting for nighttime use; however, the base area is presently lit for evening activities and ski area operations. Night lighting for snowtubing would not be visible from GTNP. Collectively, the project would incrementally add to the developed character of the area during the day and night but would not constitute a considerable departure from existing conditions.

Construction of the proposed facilities would result in a limited amount of glare in the evenings when viewed from the west. Impacts would be greatest when the sun is directly aligned with smooth materials and windows on the proposed infrastructure. This would result in temporary ephemeral impacts when viewed from locations within the angle of reflectivity. The implementation of PDC would ensure that the infrastructure meets solar reflectivity standards and minimizes visual impacts associated with reflectivity from installed infrastructure; the facility would be built with design elements that break up form, line, and texture to minimize reflectivity. Through the use of PDC, the ephemeral impact of reflective surfaces would be nominal and would not be noticeable to the casual observer.

Special Use Permit Boundary Expansion Areas

Under the Proposed Action, GTR would expand its existing SUP boundary into the South Bowl and Mono Trees areas. The South Bowl boundary expansion would add approximately 266 acres to the resort's permitted area (refer to **Figure 4**), and the Mono Trees boundary expansion would add approximately 600 acres (refer to **Figure 5**). The proposed boundary expansions would change the management direction of the South Bowl and Mono Trees areas from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites*, requiring a programmatic amendment to the *1997 Forest Plan*. The SUP boundary expansion areas would acquire the desired condition, general direction, standards, and guidelines of Management Prescription 4.2 – *Special Use Permit Recreation Sites*. In addition, the VQO designation of these areas would be changed from *Retention* to *Partial Retention* to *Partial Retention* to *Maximum Modification*.

South Bowl

The proposed South Bowl projects include the South Bowl Lift, proposed ski trails, the proposed ski patrol facility, the cat/construction and maintenance route, two proposed avalaunchers, avalanche and snowmobile rescue caches, and the bottom terminal restrooms. The proposed South Bowl projects may be visible from multiple locations within the adjusted SUP area and on adjacent NFS and NPS lands, including views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23 (refer to **Figure 7**). Proposed infrastructure would be indiscernible from views 16 and 19, as they are outside the Zone of Potential Visibility due to distance; however, the proposed ski trails, lift corridor, and cat/construction and maintenance route would be visible. Visual simulations have been created from the Grand Teton Summit (view 5), Table Mountain

(view 17), and Teton Canyon Campground (view 23) to approximate visual impacts associated with implementation of the South Bowl projects (refer to **Figures 10a, 10b, 11a, 11b, 12a and 12b**).

Scenic impacts associated with the South Bowl projects would be similar to those described for the existing SUP area; however, the projects would be located in an area that is currently void of ski area development and exists in a near natural state. Construction of the South Bowl Lift would require a corridor of uniform width through the forest canopy, below tree line. The lift corridor would be overlapped by ski trails designed to minimize sharp line contrasts between cut runs and adjacent forest. Tree clearing for the proposed lift corridor and ski trails would make use of existing avalanche paths to reduce the number of trees removed. The proposed South Bowl Lift would be designed to blend with the surrounding environment and would comply with the BEIG. Implementation of the proposed ski trails and cat/construction maintenance access route would create additional scenic impacts. Tree clearing and grading would result in unnatural breaks in vegetation as seen from foreground and middleground distance zones (refer to **Figures 11a, 11b, 12a and 12b**). This would be most apparent during the winter when white snow-covered clearings are surrounded by darker-colored trees and forest stands; however, implementation of PDC would minimize the sharp line contrasts between cleared areas and adjacent forest, visually blending them into the landscape to the greatest degree possible. The proposed ski patrol facility, avalaunchers, avalanche and snowmobile rescue caches, and restroom facility would result in additional impacts to scenery in South Bowl. These projects may be visible at foreground distance zones within the SUP expansion area and middleground distance zones on adjacent NFS lands. The structures would be designed with simple, linear forms to blend with the surrounding environment and would comply with the BEIG. Vegetation would be retained to the greatest extent possible in order to screen the structures from adjacent views and reduce visual impacts.

Implementation of the proposed South Bowl projects would introduce developed ski area infrastructure and ski trails into an area that currently exists in a near natural state. The projects would result in modest additions to a largely undeveloped landscape when viewed from foreground, middleground (views 14, 15, 17, 18, and 23), and background distance zones within the JSW. While Teton Canyon Campground (view 23) is the viewpoint located closest to South Bowl (approximately 1 mile), views of the proposed projects would be largely blocked by topography and vegetation depending on where you are along the valley floor. This viewpoint was selected because it is likely the most frequented location in Teton Canyon. Visitors of the Teton Canyon Campground may spend several hours or days in this location depending on their activity. The campground also serves as a common starting point for hikers embarking on trails in the surrounding area. As illustrated in the visual simulation prepared for the Teton Canyon Campground, the cat/construction maintenance access route is the most visible project from this viewpoint (refer to **Figure 12b**); however, the project only alters approximately 0.6 percent of the total view. Visual impacts associated with the proposed South Bowl projects would likely become more apparent in some locations when hiking to and from Teton Canyon Campground and Table Mountain. When traveling from the campground to Table Mountain, views would probably last a few seconds given the orientation of hikers. When hiking from Table Mountain to the campground, views would probably last several minutes, as hikers would be oriented more directly towards South Bowl. Scenic impacts would be greatest from Table Mountain, which is approximately 3 miles from bottom of South Bowl. As illustrated in the visual simulation for Table Mountain, the proposed projects would introduce form (ski patrol facility), lines (lift line and ski terrain), and color (lift infrastructure and ski terrain) that are not presently common in South Bowl or the characteristic landscape (refer to **Figures 11a and 11b**). The proposed South Bowl projects alter approximately 1.3 percent of the view from this viewpoint. Impacts would be similar, but less

noticeable from background (views 5, 8, 9, 10, and 11) distance zones within GTNP as illustrated in the visual simulation from the Grand Teton Summit (**Figures 10a and 10b**). The proposed South Bowl projects alter approximately 0.1 percent of the overall view from this viewpoint. Most viewers from these locations would be hikers and the duration of their view would likely last several minutes. While impacts would be modest and noticeable from the aforementioned views, with adherence to PDC identified in **Table 2.4-1**, ski area activities would remain visually subordinate to the visual strength of the characteristic landscape and would result in modest decreases in the scenic integrity of surrounding lands within the JSW and GTNP. Visual resource impacts to the South Bowl area as a result of the proposed projects are expected to be minimal. The area would continue to meet the VQO designation of *Partial Retention*. Therefore, the area would remain consistent with the existing VQO designation of *Retention to Partial Retention* as well as the proposed VQO designation of *Partial Retention to Maximum Modification*. Please refer to the **Scenery Technical Report** for more information.

Glare

Construction of the proposed South Bowl Lift, ski patrol facility, avalaunchers, avalanche and snowmobile rescue caches, and restroom facility would result in a limited amount of glare in the morning when viewed from the east. These ephemeral impacts may be visible from views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23. Impacts would be greatest when the sun is directly aligned with smooth materials and windows (lift operator buildings for some lift terminals depending on view angle and gondola cabins on Dreamcatcher Lift) on the proposed infrastructure. This would result in temporary scenic impacts when viewed from locations within the angle of reflectivity. The implementation of PDC would ensure that the infrastructure meets solar reflectivity standards and minimizes visual impacts associated with reflectivity from installed infrastructure; the facilities would be built with certain materials and given certain colors that minimize reflectivity. Through the use of PDC, the ephemeral impact of reflective surfaces would be nominal and would not be noticeable to the casual observer.

Mono Trees

The proposed Mono Trees projects include the Mono Trees Lift, proposed ski trails and glades, and the proposed bottom terminal access road. The Mono Trees area is most visible from views to the west, including views 3, 4, 6, 7, 13, 20, 21, and 22. The proposed lift infrastructure would be indiscernible from views 3, 4, 6, 7, 20, 21, and 22, as it is outside the Zone of Potential Visibility due to distance (refer to **Section 1.3.1** from the **Scenery Technical Report**); however, the proposed ski trails may be visible. This is illustrated in the visual simulation prepared for The Coulter Building Rooftop (view 3), in which none of the proposed infrastructure is discernable (refer to **Figure 9b**).

Scenic impacts associated with the Mono Trees projects would be similar to those described for the existing SUP area. Construction of the Mono Trees Lift would require a corridor of uniform width through the forest canopy, below tree line. The lift corridor would be overlapped by ski trails designed to minimize sharp line contrasts between cut runs and adjacent forest. The proposed Mono Trees Lift would be designed to blend with the surrounding environment and would comply with the BEIG.

Implementation of the proposed ski terrain would create additional scenic impacts. The development of the proposed ski trails and bottom terminal access road would require tree clearing which would result in unnatural breaks in vegetation as seen from foreground and middleground distance zones; however, implementation of PDC would minimize the sharp line contrasts between cut runs and adjacent forest, visually blending them into the landscape. The proposed glades would have some impact on scenic resources, as approximately 40 percent of trees would be removed. This tree removal would modify the

color and texture composition of forested areas within this terrain; however, it would not be homogenous and linear cuts in overstory vegetation would be minimized.

Implementation of the proposed Mono Trees projects would introduce developed ski area infrastructure and ski trails into an area that currently exists in a near natural state. As the existing developed trail network is most visible from the west and northwest, the proposed Mono Trees projects would likely be viewed as in an incremental addition to the existing trail network when seen from foreground, middleground (view 13), and background views (views 6, 7, 20, 21, and 22) in this direction. This would not result in a major change to the aesthetic character of the landscape. Conversely, when viewed from the southwest near the City of Driggs (views 3 and 4), the existing trail network is much less visible except for the upper portions of existing ski trails on Peaked Mountain. As illustrated in the visual simulation for the Coulter Building Rooftop (**Figures 9a and 9b**), the proposed Mono Trees projects would introduce color and line (ski terrain) which is found infrequently in the characteristic landscape. This would draw more attention to the ski area, when viewed from the City of Driggs. The proposed ski trails would alter approximately 0.4 percent of the overall view from this viewpoint. This would change the aesthetic of this portion of the ski area when viewed from this direction; however, the trails would remain subordinate to the visual strength of the characteristic landscape. Depending on what the viewer is doing, the duration of their view would likely range from minutes to hours; however, given the popularity of GTR as a destination ski area, it can be reasonably assumed that most viewers expect to encounter developed recreation infrastructure within the viewshed. With adherence to PDC identified in **Table 2.4-1**, visual resource impacts to the South Bowl area as a result of the proposed projects are expected to be minimal. The area would continue to meet the VQO designation of *Partial Retention to Maximum Modification*.

Glare

Construction of the proposed lift terminals and operator buildings would result in a limited amount of glare in the evenings when viewed from the west. These ephemeral impacts may be visible from views 3, 4, 6, 7, 13, 20, 21, and 22. Impacts would be greatest when the sun is directly aligned with smooth materials and windows on the proposed infrastructure. This would result in temporary scenic impacts when viewed from locations within the angle of reflectivity. The implementation of PDC would ensure that the infrastructure meets solar reflectivity standards and minimizes visual impacts associated with reflectivity from installed infrastructure; the lifts would be built with certain materials and given certain colors that minimize reflectivity. Through the use of PDC, the ephemeral impact of reflective surfaces would be nominal and would not be noticeable to the casual observer.

Consistency with 1997 Forest Plan Direction for Scenery Management

Proposed projects within the existing GTR SUP area and the Mono Trees SUP expansion would alter the appearance of the area and add incrementally to the developed character of the landscape when viewed from the west and northwest. Proposed projects within the GTR SUP, South Bowl, and Mono Trees areas would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes. With the implementation of associated PDC, these areas would be consistent with the VQO of *Partial Retention to Maximum Modification*. In addition, the proposed SUP expansion areas would remain consistent with the existing VQO designation of *Retention to Partial Retention* (Management Prescription 2.1.2 – *Visual Quality Maintenance*) as well as the proposed VQO designation of *Partial Retention to Maximum Modification* (Management Prescription 4.2 – *Special Use Permit Recreation Sites*).

Consistency with Built Environment Image Guide

Prior to construction, all proposed infrastructure, including facilities and lifts, would undergo review by a Forest Service Landscape Architect to ensure consistency with the BEIG. This includes considering the landscape, cultural and ecological character, as well as the architectural guidelines for the Rocky Mountain Province which include descriptions of appropriate siting, massing, scale, structure, materials, color, and sustainability efforts. This review is part of the Forest Service Design Review Process for all new or remodeled structures built on the forest. The design review process would have an emphasis on reflectivity and glare impacts associated with the proposed projects.

ALTERNATIVE 3 – NO SPECIAL USE PERMIT BOUNDARY EXPANSIONS

Existing Grand Targhee Resort Special Use Permit Area

Under Alternative 3, impacts to scenic resources in the existing GTR SUP area would be identical to those discussed under the Proposed Action. For a discussion of these impacts, refer to the Existing Grand Targhee Resort Special Use Permit Area heading.

Adjacent NFS Lands

Under Alternative 3, no actions would occur in areas adjacent to the existing GTR SUP boundary. In this regard, this alternative is similar to the No Action Alternative. No visual impacts would occur in adjacent lands under this alternative.

South Bowl

Implementation of Alternative 3 would result in a continuation of existing conditions in South Bowl. The GTR SUP area would not be expanded into South Bowl and the associated ski area infrastructure and ski terrain proposed under Alternatives 2 and 4 would not be constructed. South Bowl would remain in its existing near natural state, as described under the South Bowl heading and as pictured in the existing conditions visual simulations for Teton Canyon and Table Mountain (refer to **Figures 11a and 12a**). Views from adjacent NFS and NPS lands, including views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23, would not be impacted.

Mono Trees

Implementation of Alternative 3 would result in a continuation of existing conditions in the Mono Trees area. The GTR SUP area would not be expanded into Mono Trees and the associated ski area infrastructure and ski terrain proposed under Alternatives 2 and 5 would not be constructed. Mono Trees would remain in its near natural state, as described under the Mono Trees heading and as pictured in the existing conditions visual simulation for the Coulter Building Rooftop (refer to **Figure 9a**). Views from adjacent NFS and private lands, including views 3, 4, 6, 7, 13, 20, 21, and 22, would not be impacted.

Consistency with 1997 Forest Plan Direction for Scenery Management

Proposed projects within the existing GTR SUP area would alter the appearance of the area and add incrementally to the developed character of the landscape when viewed from the west and northwest. When viewed from the southwest, these projects would introduce form, line, color, and texture that is not presently common; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscape. With the implementation of associated PDC, the GTR SUP area would be consistent with the VQO of *Partial Retention to Maximum Modification*.

Furthermore, under Alternative 3 there would be no proposed project-specific *1997 Forest Plan* amendments to change the Management Prescription of the South Bowl and Mono Trees areas from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites* (refer to **Appendix D** for more information). As these areas would continue to be managed as Management Prescription 2.1.2 – *Visual Quality Maintenance*, they would maintain their existing desired condition, general direction, and standards, as well as the VQO designation of *Retention* to *Partial Retention*. Maintaining the existing VQO designation, rather than changing it to *Partial Retention* to *Maximum Modification* as proposed under Alternatives 2, 4, and 5, would support higher scenic integrity in the area.

Consistency with Built Environment Image Guide

Prior to construction, all proposed infrastructure, including facilities and lifts, would undergo Forest Service review to ensure consistency with the BEIG. This includes considering the landscape, cultural and ecological character, as well as the architectural guidelines for the Rocky Mountain Province which include descriptions of appropriate siting, massing, scale, structure, materials, color, and sustainability efforts. This review is part of the Forest Service Design Review Process for all new or remodeled structures built on the forest. The design review process would have an emphasis on reflectivity and glare impacts associated with the proposed projects. Final design of the facility would be reviewed and approved by a specialized BEIG Forest Service representative to minimize impacts to the scenery resource.

ALTERNATIVE 4 – SOUTH BOWL SPECIAL USE PERMIT BOUNDARY EXPANSION ONLY

Existing Grand Targhee Resort Special Use Permit Area

Under Alternative 4, impacts to scenic resources in the existing GTR SUP area would be identical to those discussed for the Proposed Action. For a full discussion of these impacts, refer to the Existing Grand Targhee Resort Special Use Permit Area heading.

Adjacent NFS Lands

South Bowl

Under Alternative 4, impacts to scenic resources in South Bowl would be identical to those discussed under the Proposed Action. For a full discussion of these impacts, refer to the South Bowl heading under Alternative 2 – Proposed Action.

Mono Trees

Implementation of Alternative 4 would result in a continuation of existing conditions in the Mono Trees area. The GTR SUP area would not be expanded into Mono Trees and the associated ski area infrastructure and ski terrain proposed under Alternatives 2 and 5 would not be constructed. Mono Trees would remain in its near natural state, as described under the Mono Trees heading under Alternative 3 – No Special Use Permit Boundary Expansions and as pictured in the existing conditions visual simulation for the Coulter Building Rooftop (refer to **Figure 9a**). Views from adjacent NFS and private lands, including views 3, 4, 6, 7, 13, 20, 21, and 22, would not be impacted.

Consistency with 1997 Forest Plan Direction for Scenery Management

Proposed projects within the existing GTR SUP area would alter the appearance of the area and add incrementally to the developed character of the landscape when viewed from the west and northwest. Proposed projects within the GTR SUP and South Bowl would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes. With the implementation of associated PDC, these areas would be consistent with the VQO of *Partial Retention to Maximum Modification*. In addition, the proposed South Bowl SUP expansion area would remain consistent with the existing VQO designation of *Retention to Partial Retention* as well as the proposed VQO designation of *Partial Retention to Maximum Modification*.

Furthermore, under Alternative 4 there would be no proposed programmatic *1997 Forest Plan* amendment to change the Management Prescription of the Mono Trees areas from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites*. As this area would continue to be managed as Management Prescription 2.1.2 – *Visual Quality Maintenance*, it would maintain the existing desired condition, general direction, and standards, as well as the VQO designation of *Retention to Partial Retention*. Maintaining the existing VQO designation, rather than changing it to *Partial Retention to Maximum Modification* as proposed under Alternatives 2 and 5, would support higher scenic integrity in the area.

Consistency with Built Environment Image Guide

Prior to construction, all proposed infrastructure, including facilities and lifts, would undergo Forest Service review to ensure consistency with the BEIG. This includes considering the landscape, cultural and ecological character, as well as the architectural guidelines for the Rocky Mountain Province which include descriptions of appropriate siting, massing, scale, structure, materials, color, and sustainability efforts. This review is part of the Forest Service Design Review Process for all new or remodeled structures built on the forest. The design review process would have an emphasis on reflectivity and glare impacts associated with the proposed projects.

ALTERNATIVE 5 – MONO TREES SPECIAL USE PERMIT BOUNDARY EXPANSION ONLY

Existing Grand Targhee Resort Special Use Permit Area

Under Alternative 5, impacts to scenic resources in the existing GTR SUP area would be identical to those discussed for the Proposed Action. For a discussion of these impacts, refer to the Existing Grand Targhee Resort Special Use Permit Area heading under Alternative 2 – Proposed Action.

Adjacent NFS Lands

South Bowl

Implementation of Alternative 5 would result in a continuation of existing conditions in South Bowl. The GTR SUP area would not be expanded into South Bowl and the associated ski area infrastructure and ski terrain proposed under Alternatives 2 and 4 would not be constructed. South Bowl would remain in its existing near natural state, as described under the South Bowl heading of Alternative 3 – No Special Use Permit Boundary Expansions and as pictured in the existing conditions visual simulations for Teton

Canyon and Table Mountain (refer to **Figures 11a and 12a**). Views from adjacent NFS and NPS lands, including views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23, would not be impacted.

Mono Trees

Under Alternative 5, impacts to scenic resources in the Mono Trees area would be identical to those discussed under the Proposed Action. For a discussion of these impacts, refer to the Mono Trees heading under Alternative 2 – Proposed Action.

Consistency with 1997 Forest Plan Direction for Scenery Management

Proposed projects within the existing GTR SUP area and the Mono Trees SUP expansion would alter the appearance of areas and add incrementally to the developed character of the landscape when viewed from the west and northwest. When viewed from the southwest, these projects would introduce form, line, color, and texture that is not presently common; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscape. With the implementation of associated PDC, these areas would be consistent with the VQO of *Partial Retention to Maximum Modification*.

Furthermore, under Alternative 5 there would be no proposed programmatic *1997 Forest Plan* amendment to change the Management Prescription of the South Bowl from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites*. As this area would continue to be managed as Management Prescription 2.1.2 – *Visual Quality Maintenance*, it would maintain its existing desired condition, general direction, and standards, as well as the VQO designation of *Retention to Partial Retention*. Maintaining the existing VQO designation, rather than changing it to *Partial Retention to Maximum Modification* as proposed under Alternatives 2 and 4, would support higher scenic integrity in the area.

Consistency with Built Environment Image Guide

Prior to construction, all proposed infrastructure, including facilities and lifts, would undergo Forest Service review to ensure consistency with the BEIG. This includes considering the landscape, cultural and ecological character, as well as the architectural guidelines for the Rocky Mountain Province which include descriptions of appropriate siting, massing, scale, structure, materials, color, and sustainability efforts. This review is part of the Forest Service Design Review Process for all new or remodeled structures built on the forest. The design review process would have an emphasis on reflectivity and glare impacts associated with the proposed projects.

3.2.5 Cumulative Effects

TEMPORAL BOUNDS

The temporal bounds for this cumulative effects analysis of visual resources extend from GTR's founding as a resort in 1966 through the foreseeable future in which GTR can be expected to operate.

SPATIAL BOUNDS

The spatial scope for this cumulative effects analysis of visual resources includes reasonably foreseeable future projects that would occur within the viewshed of the project area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

The list of past, present, and reasonably foreseeable future projects considered in this cumulative analysis is provided in **Appendix A**. Any present or reasonably foreseeable future projects within the viewshed of the project area that have the potential to reduce the project area's visual quality are analyzed below.

This cumulative effects analysis analyzes all projects in the 2018 MDP, including those that are not included in the Proposed Action. As these unimplemented projects are accepted in the 2018 MDP but not approved under environmental review, they are considered here as reasonably foreseeable future projects. Included in the 2018 MDP but not in the Proposed Action are various lift projects, trail improvements, and additions to the developed terrain network, as well as updates to guest services and associated facilities. The PUD-PR includes the development of various residential, commercial, and resort services on GTR private land at the base of the resort. Lastly, the Teton Canyon Hazardous Fuels Reduction Environmental Assessment and Decision Notices analyzed and approved the implementation of mechanical treatments, prescribed burning, and slashing treatments following by prescribed burning on approximately 1,900 acres of NFS lands adjacent to the ski area SUP boundary.

In combination with previously accepted and approved projects that are reasonably foreseeable, and past projects that have been implemented at GTR, the proposed projects would contribute incrementally to the modified nature of the area and would further detract from the natural character of visual resources as viewed from the JSW, GTNP, the City of Driggs, Idaho, and other areas within the project viewshed. These changes could take the form of additional built infrastructure, overstory vegetation clearing, prescribed burning, and tree stand thinning. Potential impacts associated with these projects include changes to landscape dominance elements (form, line, color, texture), degree of contrast that results from the presence of the project compared to the existing condition, inconsistencies with relevant VQOs, and general reductions in natural-appearing landscape of the project area. Changes may occur in areas where management activity is or is not evident and may be characterized by changes to the overall area or changes in scenic quality when viewed from specific viewpoints.

Ongoing projects show that changes to the visual attributes of the surrounding areas are occurring independently from additional projects implemented at GTR. As discussed above, the *1997 Forest Plan* includes mechanisms for the management of scenic resources Forest-wide. While the *1997 Forest Plan* includes numerous Management Prescriptions that could impact scenic resources across the CTNF, the application of standards and guidelines would ensure that scenic quality is managed as directed by the *1997 Forest Plan* and considered in the analysis of future projects.

3.2.6 Irreversible and Irretrievable Commitments of Resources

The implementation of additional winter and summer activities/infrastructure in the SUP area would represent irretrievable effects to scenic resources at GTR. However, this commitment of the scenic resource is not irreversible because facilities could be removed and, in time, areas could be reclaimed and revegetated, restoring their natural appearance.

3.3 Noise

3.3.1 Scope of the Analysis

The spatial bounds considered for this analysis of noise are the existing and proposed GTR SUP areas and the adjacent public and private lands. Additional noise and alterations to the existing soundscape have the

potential to be generated by the operation and construction of the proposed projects, including timber removal. Existing noise levels in the study area were assessed to construct a set of baseline conditions that can be compared to noise impacts associated with the Proposed Action and Alternatives being analyzed in detail. Noise associated with the operation and construction of projects throughout the existing and proposed SUP areas are analyzed and disclosed within this section.

3.3.2 Affected Environment

Throughout this analysis, dBA is specifically used in order to compare the relative loudness of existing and proposed conditions at GTR. *A-weighted decibel* or *dBA* is a measurement of sound level expressed in decibels, filtered or weighted at various frequencies to approximate the loudness of a sound to the human ear. For comparison purposes, typical noise levels associated with a variety of common sources are outlined in **Table 3.3-1**. It is important to note that noise levels for common sources provided in Table 3.3-1 are non-linear and an expression of relative loudness that gives more value to frequencies in the middle of human hearing and less value to frequencies at the edges as compared to a flat audio decibel measurement.

Table 3.3-1. Noise Levels for Common Sources

Source/Type	Noise Level (dBA)
Lowest threshold of human hearing	0
Quiet rural area	25 to 30
Quiet residential area	40
Rainfall	50
Conversation, busy office	50 to 60
Heavy traffic	70
Diesel truck	80 to 90
Snowmobile at a distance of 25 feet	100
Thunder	120

Source: Center for Hearing and Communication 2016

In general, winter operations have higher noise levels than summer operations at GTR. With approximately 231,300 annual winter visitors in the 2020/21 season and 33,400 annual summer visitors in 2021, the overall activity in the project area is much higher during the winter months. Noise generated by guests and infrastructure occurs throughout the SUP area and base area. Existing noise levels within the SUP area and away from the base area can range from a level similar to a quiet rural area (25 to 30 dBA) in the undeveloped extents of the terrain network, to a level similar to a snowmobile at a distance of 25 feet (100 dBA) in areas where heavy equipment including snowmobiles, snowcats, and chairlifts may

dominate the soundscape during operating hours. Characteristically, noise levels in the SUP area are closer to the low end of the 25 to 100 dBA range.

Existing noise levels during the summer months, within and adjacent to the GTR SUP area, would continue to be generated from a number of sources including mountain maintenance and operations, base area traffic and activity, and recreation-related noise. These noise levels would likely be observed during operation hours (mid-June to mid-September, 10:00am to 5:00pm). Summer mountain operations are located primarily at the base of the Shoshone and Dreamcatcher Lifts, in areas served by the Dreamcatcher and Shoshone Lifts, and on trails throughout the SUP area. Noise in these areas originates from recreational users participating in multi-season recreation opportunities such as mountain biking, hiking, scenic chairlift rides, and disc golf. Mountain biking and hiking activities typically generate noise levels comparable to a normal conversation (60 dBA). The operation of lifts and summer infrastructure that serve these activities can be heard in these areas when in close proximity and range from 60 to 80 dBA, depending on the type of activity and the listener's proximity. Similar to winter operations, there are portions of the SUP area where dispersed recreation occurs that more closely resembles the quiet rural areas (20 to 30 dBA) noise level.

Despite being located on private lands, noise levels in the base area are important because guests enter through this portal to NFS lands. Sounds heard in this area can affect the guest's overall experience. In the winter and summer operation seasons, guests of the resort and forest visitors in surrounding areas would expect to hear noises from people gathering, dining facilities, ticket offices, retail and rental shops, concerts or music, and nearby traffic. Noise levels in this area could range from a conversation (50 dBA) to an outdoor concert (120 dBA).

Mountain maintenance and on-going construction activities, which primarily occur during the summer months, can cause high decibel levels of noise. These noises can originate from trucks traveling up and down mountain roads, workers conducting lift and facility maintenance, construction of new infrastructure, and logging operations to remove dead trees or construct new trails. Typical noise levels from construction equipment and activity related to construction can range from those similar to heavy traffic (70 dBA) to diesel truck (90 dBA).

Additionally, the use of helicopters for the removal of trees and other construction related projects has occurred in the past during the spring and summer months. In 2007 the Forest Service conducted a noise measurement study of two heavy-lift helicopters (the Boeing Vertol 107 and the Kaman KMAX) taken in the field during helicopter logging operations.³⁹ This study was used to determine auditory impact of helicopter logging operations on threatened species by recording the dBA of the aircraft at various distances. Sound data was gathered while the helicopters were in flight traveling to and from log landing sites to collect their loads; data was not gathered at the service (fueling) landing because the helicopter sound generated at this location is at its lowest noise level as the helicopter is not carrying a load.⁴⁰ The louder of the two helicopters, the Vertol 107, has a range of approximately 80 dBA at a horizontal distance of approximately 850 feet to 100 dBA at a horizontal distance of approximately 200 feet.⁴¹ The

³⁹ Harrison 2008

⁴⁰ Harrison 2008

⁴¹ Ibid.

regression associated with this range indicates that loudness would be greater within 200 feet and lower beyond 850 feet.

The typical noise levels from construction equipment, including helicopters and blasting, is on the higher end of relative loudness; however, these activities generally last for a short duration of time. Other events that feature live or amplified music and/or speakers also occur in the base area during both the summer and winter seasons, although not on a regular basis. Noises at these events are similar to that of a small outdoor concert, which can range from 110 to 120 dBA.⁴²

As depicted in **Figure 1**, the GTR SUP boundary borders the JSW.GTR's winter and summer operations generate noise that can travel over this shared boundary. This is particularly true for operational equipment, such as snowmobiles or snowcats, traveling close to the shared boundary, or for construction activities during the summer months. However, operational equipment is not likely to generate enough noise to measurably alter the soundscape within JSW, and construction activities are only temporary and vary in their proximity to JSW. For a full discussion of wilderness and GTR's potential impacts on the JSW, refer to **Section 3.9**.

3.3.3 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, noise impacts within the GTR SUP area would not change from those described under Affected Environment. Existing noise levels within the SUP area would continue to range from 25 to 30 dBA in the expansive undeveloped extents of the terrain network, to 100 dBA in areas where heavy equipment may dominate the soundscape for short periods of time.

ALTERNATIVE 2 – PROPOSED ACTION

Under the Proposed Action, noise within and adjacent to the proposed and expanded GTR SUP boundary would be generated from similar sources as described in the Affected Environment. The operation of the proposed projects are not anticipated to result in considerable increases to the existing noise levels within and adjacent to the existing GTR SUP area, however, the construction of the proposed projects would result in a temporary increase in noise levels within and adjacent to the GTR SUP area. With the exception of proposed projects in the South Bowl and Mono Trees areas, operational noise of additional recreational users would add to existing noise levels within the GTR SUP boundary. The additional noise in the SUP area is not anticipated to have an adverse effect; however, noise in the South Bowl and Mono Trees areas would be new rather than an incremental increase from the existing noise range. Both noise associated operations and construction are detailed in the following discussion.

Operations

Noise associated with the operation of proposed projects and activities would be long-term and would occur throughout the winter and summer seasons for the life of the project. As previously discussed, proposed projects occurring within GTR's current SUP boundary (prior to expansion) would have an incremental effect on the existing soundscape. The noises and noise levels of projects and activities that would be added to the SUP area are characteristic of noises and noise levels that are currently heard in the SUP area. Further, it is anticipated that the incremental increase in noise would be diluted as a majority of

⁴² Center for Hearing and Communication 2016

the proposed activities would disperse users throughout the SUP area and are not concentrated in areas already characterized by loudness like the base area. The Proposed Action includes a surface lift, Palmer Platter, as well as two magic carpets, which would cause an increase in the noise levels in the base area. However, as mentioned previously, other proposed projects including the installation of the Crazy Horse and North Boundary Lifts would distribute users and avoid concentration in these areas even with a visitation increase, diluting the increase in noise levels of the base area. Although the existing Dreamcatcher Lift would be replaced with newer and larger infrastructure, this equipment is not necessarily louder; the existing and proposed lifts are both detachable and thus use the same infrastructure to operate. Therefore, as new infrastructure would not measurably increase the existing noise conditions in the base area, the Proposed Action is not anticipated to change existing noise conditions in the base area.

In addition to the year-round noise levels, the Proposed Action includes a Summer Activity Zone in the base area and under the Shoshone Lift. This area would include activities infrastructure including a relocated disc golf course, zip lines, and large posts as part of fly line canopy tours. Increase in guests and infrastructure in this area would result in increased noise levels near the base area and through the top of the Shoshone Lift. Following construction of the Summer Activity Zone, guests would expect to hear noises from zip lines, lift operations, dining facilities, ticket offices, concerts or music, and nearby traffic. Noise levels in the base area would continue to range from a conversation (50 dBA) to heavy traffic (70 dBA), and noise levels in the Summer Activity Zone would range from a quiet rural area (25 to 30 dBA) to an outdoor concert (120 dBA).

The extension of the SUP boundary into the Mono Trees area and associated projects that would be constructed in this area would alter the existing soundscape of these NFS lands. As there are currently no ski area operations and minimal recreational use in this area, noise levels are estimated as that of a quiet rural area or a quiet residential area, ranging from 25 to 40 dBA. Noise from adjacent ski area operations is likely heard in this area during the winter season; however, they do not characterize the soundscape. Upon implementation of the Proposed Action and construction of lift-served skiing in this area it is anticipated that the soundscape would more closely resemble that which is currently associated with the existing SUP area. Noise would be generated by guests and infrastructure that would be constructed in the Mono Trees area. It is anticipated that noise would range from a level similar to a quiet rural area (25 to 30 dBA) in the less developed extents of this terrain to a level similar to a snowmobile at a distance of 25 feet (100 dBA) where heavy equipment, including snowmobiles, snowcats, and lifts may dominate the soundscape for short periods of time. It is likely that the noise in this area would be screened from Teton Canyon due to terrain and vegetation; however, noise in this area may be heard from Ski Hill Road. In the winter, this would create negligible impacts because there are few bikers on the road, most cars drive with their windows closed given cold temperatures, and wildlife are used to noise being present in this area given existing ski area conditions. In the summer, the impacts to noise would also be negligible because there would be no operations in Mono Trees unless construction and maintenance need to occur, which would be for short periods of time.

The proposed projects in the South Bowl area and the extension of the SUP boundary into the South Bowl would create similar noise level increases as that of the Mono Trees area described previously; however, South Bowl operations would also require the installation and use of avalaunchers in order to mitigate user risk. Avalaunchers launch explosives into areas prone to avalanches and would create temporary disturbances to the soundscape similar to the noise levels of thunder. There are currently no avalaunchers within the existing SUP boundary. Upon implementation of the Proposed Action and construction of lift-

served skiing in this area, the soundscape would resemble a range from noise levels of a quiet rural area (25 to 30 dBA) to thunder (120 dBA). Operations in South Bowl would likely be heard by recreators elsewhere in Teton Canyon and in other areas within the SUP boundary.

While activities within the GTR SUP boundary would not measurably alter the soundscape of the area, the use of avalanche mitigation infrastructure in South Bowl area would have a greater impact on the JSW soundscape than existing activities. The existing soundscape in the JSW ranges from a quiet rural area (25 to 30 dBA) to a snowmobile at a distance of 100 feet (100 dBA). Conditions under the Proposed Action would create a soundscape that ranges from a quiet rural area to thunder (120 dBA) as associated with South Bowl avalanche mitigation. Additionally, the construction of Fred's Mountain Top Guest facility would generate noise that could travel into the JSW. Therefore, it is likely that there would be impacts to the JSW soundscape in areas of the wilderness proximate to the existing and proposed GTR SUP boundary. Extents of the JSW further from GTR would not be impacted and the overall soundscape of the JSW would resemble existing conditions. Refer to **Section 3.9** for more information.

Construction

Construction-generated noise would generally be short-term, as it would cease upon completion of the project. Noise from construction-related activities would include construction equipment (i.e., diesel trucks, helicopters), construction of the proposed activities (e.g., falling logs and pouring concrete), and transporting materials for construction.

A variety of construction vehicles could be used for the proposed projects, and could include standard pickup trucks, diesel concrete trucks, and/or diesel flatbed semi-tractor trailers. The proposed activities are estimated to require several truckloads of materials and equipment over the proposed projects' implementation period. Construction activities would primarily occur in the summer. A typical summer day may experience up to 5 truck trips for timber removal and project staging/building, as well as an additional 5 vehicle trips for construction workers arriving and leaving the site. Noise levels from diesel trucks typically ranges from 80 to 90 dBA.⁴³

Tree removal for all projects is proposed to be accomplished primarily over-the-snow and utilizing the on-mountain road network. No skid roads would be constructed as timber would either be removed over the snow via snowcat, transported over the snow to a deck location accessible from the road network, piled and burned, or removed via helicopter. Low-impact machinery (e.g., a spider hoe or helicopter) may be necessary in areas such as South Bowl with steep terrain to assist with tree removal. For lift terminal construction, heavy machinery and blasting may also be required. Noise levels from equipment used to fall trees (e.g., spider hoe with masticator), as well as concrete trucks and mixers, all range from 80 to 90 dBA. The use of heavy machinery (e.g., helicopter), chainsaws, or explosives would cause higher noise levels in the project area, ranging from 80 to 120 dBA.⁴⁴ As described previously, these noise impacts would generally be short-term and higher noise levels wouldn't typically occur during day-to-day operations as construction occurs intermittently.

As discussed in **Section 3.3.2**, helicopters associated with tree removal have a noise range of 80 dBA at a horizontal distance of approximately 850 feet to 100 dBA at a horizontal distance of approximately 200

⁴³ Center for Hearing and Communication 2016

⁴⁴ Center for Hearing and Communication 2016

feet.⁴⁵ Trees removed in the South Bowl area may be flown via helicopter to a landing zone and taken off-site via truck. It is anticipated that this location would likely experience the greatest noise impact from helicopter use as NFS users are most likely to be within audible range. As previously mentioned, the regression associated with noise generated by the helicopter continues to taper off beyond 850 feet, resulting in an incrementally less than 80 dBA loudness the further one gets from the helicopter.⁴⁶ The entirety of the flight path would be chosen to be well beyond 850 feet away from population centers and residential areas so that noise associated with the helicopter would be comparable to heavy traffic, and only isolated users of NFS lands in closest proximity to timber staging areas and the landing zone would experience loudness within the 80 dBA and 100 dBA range.⁴⁷

ALTERNATIVE 3 – NO SUP EXPANSION

The noise levels of Alternative 3 would be identical to the noise levels within the SUP area as described in Alternative 2 – Proposed Action. More specifically, Alternative 3 would include an incremental increase in noise levels throughout the SUP area due to increased skier capacity and the addition of new lifts and facilities but would exclude the soundscape alterations of the areas currently outside of the SUP boundary. Alternative 3 does not include the expansion into the Mono Trees or South Bowl areas; therefore, while noise from the adjacent ski area operations would likely be heard from these areas, it would not characterize these soundscapes. Additionally, without the use of avalaunchers in the South Bowl area, the impacts of GTR's operations on the JSW soundscape would be lesser than those of the Proposed Action but would still alter the soundscape due to the construction and operation of the Fred's Mountain Top Guest facility. Refer to **Section 3.9** for a discussion of impacts to the JSW.

Construction activities for Alternative 3 would also be identical to those described under Alternative 2 – Proposed Action, however, would exclude construction activity in the Mono Trees and South Bowl area. This would exclude the potential use of a helicopter in the South Bowl area for tree removal, thus reducing the temporary noise increase in and around the SUP area.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Alternative 4 would have noise levels identical to those described in the Proposed Action except for the noise levels described in the Mono Trees area. More specifically, the projects within the SUP area would create an incremental increase in noise levels throughout the resort and the South Bowl project would alter the soundscape of the existing area, which currently has no ski operations. South Bowl avalanche mitigation activities would also increase sound levels in the JSW from GTR's operations, as described under the Proposed Action. This alternative would have little to no impact on the Mono Trees area soundscape.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Alternative 5 would have noise levels identical to those described in the Proposed Action except for the noise levels described in the South Bowl area. More specifically, the projects within the SUP area would create an incremental increase in noise levels throughout the resort and the Mono Trees project would alter the soundscape of the existing area, which currently has no ski operations. However, this alternative

⁴⁵ Harrison 2008

⁴⁶ Ibid

⁴⁷ Ibid

would not include the alteration of the South Bowl area soundscape. Therefore, the impacts of GTR's operations on the JSW soundscape would not measurably differ from existing conditions.

3.3.4 Cumulative Effects

SCOPE OF THE ANALYSIS

The effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the existing and proposed GTR SUP areas and on adjacent NFS and private lands, as well as throughout Teton County, Wyoming and Idaho.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for noise extend from GTR's inception as a resort in 1969 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for noise are limited to public and private lands in the vicinity of the existing and proposed GTR SUP area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the document. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment. The projects that could have cumulative impacts on noise resources are analyzed below.

The expansion and development within and adjacent to the existing GTR SUP area has incrementally added to the level of noise in the area. Within the GTR SUP area, noise levels have been impacted by the development of additional ski terrain, construction of lifts such as the Colter Lift, construction of mountain biking and hiking trails, and similar activities included in the past analyses and documents listed previously. Additionally, future projects that have yet to be implemented and are included in these documents and analyses would be expected to further add to noise levels within the GTR SUP area. Adjacent to the GTR SUP area, residential construction, increased traffic, and additional construction within the GTR base area have added to the noise level in the study area.

The Proposed Action would incrementally add to noise levels within the GTR SUP area with construction of the activities in the short-term and with additional visitors and traffic in the long-term. These developments and future GTR development would gradually add to the level of noise within the SUP area, which could potentially be heard from adjacent public and private lands. Further, the expansion of GTR's SUP boundary and development of lift-served skiing opportunities in the South Bowl and Mono Trees areas would increase noise levels in areas not previously affected by ski area operations, further extending the reach of GTR's contribution to noise levels when considered cumulatively with other projects. Cumulatively, these potential impacts would not measurably alter the broader soundscape.

3.3.5 Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, ski area operations and infrastructure would extend into the South Bowl and Mono Trees areas not currently within GTR's SUP area. This would result in long-term alterations to the soundscape that represents an irretrievable commitment of resources. The implementation of lift-served skiing opportunities in the South Bowl and Mono Trees areas are not considered irreversible commitments of these resources because operations could be discontinued, returning the soundscape of these areas to their natural states. No additional irreversible and/or irretrievable commitment of resources have been identified that may impact noise levels in association with the alternatives analyzed in this document.

3.4 Socioeconomics

3.4.1 Scope of the Analysis

This analysis summarizes the *Socioeconomics Technical Report for the Grand Targhee Master Development Plan Environmental Impact Statement* ([Socioeconomics Technical Report](#)).⁴⁸ Refer to the **Socioeconomics Technical Report** for more information on methodology, definitions, *1997 Forest Plan* direction, and data outputs.

The economic impact analyses for existing and proposed conditions were conducted using IMPLAN (Economic Impact Analysis for Planning), a broadly accepted model used by the Forest Service for making projections regarding employment and economic impacts. Refer to the **Socioeconomics Technical Report** for more information on methodology and assumptions used for this analysis.

3.4.2 Federal, State, and Local Policy and Guidance

FEDERAL POLICY AND GUIDANCE

1997 Forest Plan Direction

The *1997 Forest Plan* does not provide management direction specific to social and economic resources. However, the CTNF recognizes the link between public use of NFS lands and the economies and societies of adjacent communities.

3.4.3 Affected Environment

GENERAL DESCRIPTION

The study area is comprised of four counties: three in Idaho and one in Wyoming. GTR is located in Teton County, Wyoming but given topography and the road network, most GTR guests and employees must travel through Teton County, Idaho to arrive at GTR. The unincorporated community of Alta, Wyoming, near the base of GTR, is relatively small in terms of both workforce and tourist services so the nearby Idaho communities of Driggs and Victor also have a strong relationship with the resort. In general, socioeconomics relationships are strongest closer to the WY-22 and ID-33 highway corridors, but the socioeconomics effects of GTR could spread throughout the four counties.

⁴⁸ SE Group 2023c

In addition to GTR, Teton County, Wyoming is also home to Jackson Hole Mountain Resort, Snow King Resort, and serves as a primary gateway to GTNP. While Teton County, Idaho also has socioeconomic relationships with these other recreational draws in the region, its relationships are generally strongest with GTR. As a result, GTR lies within the jurisdiction of Teton County, Wyoming and the State of Wyoming, but many of its strongest socioeconomic relationships are with Teton County, Idaho.

POPULATION

Population in all study area counties has seen steady growth in the past decade according to census data. For complete details of census details and growth by county, refer to the **Socioeconomics Technical Report**. It is important to note that while census data is the primary source for population numbers, there are certain limitations to the data. Population counts do not account for growth in second homeowners in these counties. Therefore, while the number of residential units may increase, the population may remain relatively constant. Further, the 2020 decennial census was conducted during the COVID-19 pandemic, which likely had an impact as well.

All study area counties have experienced steady growth between 1990 and 2020. Teton County, Idaho has experienced the highest growth rates of all study area counties in this time period, with a total growth of approximately 240 percent. The Teton County 2012-2030 Comprehensive Plan states that the county has attracted second homeowners related to the Wyoming tourist destinations of Jackson Hole and GTR, and that the City of Victor has seen high population growth, from which many Wyoming employees commute.⁴⁹ Teton County, Idaho also has the lowest total population of all study area counties, at nearly 12,000 in 2020.⁵⁰ On the other hand, Bonneville County, Idaho has the largest total population (nearly 124,000 in 2020), but experienced the slowest rates of growth between 1990 and 2020 with a net growth of approximately 72 percent in this period.⁵¹ The other two study area counties, Teton County, Wyoming and Madison County, Idaho, experienced growth rates in the low 100s. Population projections predict that population would continue to grow in the study area counties, and some would experience slower growth than in previous years.

⁴⁹ Teton County Wyoming 2012

⁵⁰ U.S. Census Bureau 2022b

⁵¹ Ibid

ECONOMY

Income and Poverty

Household income and the proportion of the population below the poverty level are important measures of the ability of households and individuals to achieve economic security. Teton and Bonneville counties in Idaho had higher average incomes and lower percentages of poverty in 2020 compared with the statewide averages for Idaho.⁵² In 2020, Madison County, Idaho had the lowest average incomes and highest percentages of poverty compared with the other three study area counties, and Teton County, WY had the highest household incomes and lowest poverty rates of the study area counties.^{53,54} Teton County, Wyoming is known to have substantial income disparity and was named the most unequal county in the United States in 2020.⁵⁵ It is important to note that these figures are based on total personal income, from both labor (e.g., wages) and non-labor (e.g., investment income) sources. Median household income, percentage of population below the poverty level, and percentage of households with income over \$100,000 for the United States, Idaho, Wyoming, and the study area counties are presented in **Table 3.4-1**.

Table 3.4-1: Study Area Counties Median Household Income and Percentage of Population below the Poverty Level, 2020

Geographic Area	Median Household Income including Benefits	Percentage of Population Below the Poverty Level	Percentage of Households with Income over \$100,000
United States	\$62,843	11.4	31.0
Wyoming	\$64,049	9.2	28.7
Idaho	\$55,785	10.1	24.2
Teton County, ID	\$74,216	7.4	39.3
Teton County, WY	\$84,678	5.2	42.0
Bonneville County, ID	\$60,615	9.7	25.8
Madison County, ID	\$39,160	14.3	18.8

Source: U.S. Census Bureau 2022b

⁵² U.S. Census Bureau 2022b

⁵³ Ibid.

⁵⁴ Ibid.

⁵⁵ Economic Policy Institute 2018a

Labor Force and Employment Status

An area's labor force is comprised of both employed and unemployed civilians. Unemployed civilians in the labor force are those who are actively searching for work; civilians not in the labor force are those who are not actively searching for work, such as a stay-at-home parent.⁵⁶

The study area counties labor forces ranged from approximately 6,600 in Teton County, Idaho to 58,000 in Bonneville County, ID, as indicated in **Table 3.4-2**.⁵⁷ Madison, Bonneville, and Teton counties in Idaho experienced moderate growth in their labor forces between 2016 and 2020 ranging from two to 2.6 percent growth annually.⁵⁸ Conversely, Teton County, Wyoming experienced relatively no growth in the same period, with an average annual growth rate of -0.03 percent.⁵⁹

Unemployment rates were highest in 2020 for all study area counties, likely as a result of the COVID-19 pandemic. Between 2016 and 2019, all study area counties experienced unemployment rates lower than or nearly equal to that of their respective states, with ranges from approximately 1.7 to 3.5 percent. The range increased to 2.7 to 6 percent in 2020.

Madison and Bonneville counties experienced relatively steady unemployment rates throughout the year; however, Teton County, Idaho and Teton County, Wyoming experience seasonal fluctuations. In both counties, unemployment rates were consistently higher in November and in the winters and are lowest between June and September between 2016 and 2020.⁶⁰

Table 3.4-2. Study Area Counties Average Labor Force, 2016–2020

Area	Labor Force	Employed	Unemployed	Unemployment Rate (%)
Teton County, ID	6,349	6,149	200	3.1
Teton County, WY	15,513	14,951	563	3.6
Bonneville County, ID	55,223	53,623	1,599	2.9
Madison County, ID	21,523	21,077	446	2.1
State of Idaho	854,756	824,314	30,442	3.6
State of Wyoming	296,881	283,063	13,819	4.6

Source: U.S. Department of Labor 2021

⁵⁶ Economic Policy Institute 2018b

⁵⁷ U.S. Department of Labor 2021

⁵⁸ Ibid

⁵⁹ Ibid

⁶⁰ U.S. Department of Labor 2020

Travel and Tourism Economy

Basic industry economic drivers are defined by industries such as mining, manufacturing, agriculture, national and regional services, government and households, which draw money into the area from other regions. Within Teton County, Wyoming, travel and tourism is the largest base industry, generating approximately 45 percent of all employment in the county.⁶¹ In comparison, travel and tourism accounts for about 15 percent of total employment nationally. Each of the Idaho counties in the study are much less reliant on travel and tourism, ranging from approximately 10 percent of all employment in Madison County to approximately 19 percent of all employment in Teton County, Idaho.⁶²

All counties in the study area have demonstrated modest growth in the travel and tourism sector since 1998, but employment in the industries that include travel and tourism has been growing at a much faster rate in Madison and Teton counties in Idaho than in the other counties. There is an overall trend within the economies of the study area and nationally towards greater reliance on travel and tourism.⁶³ Madison and Teton counties in Idaho have experienced the highest rate of growth in these industries even though Teton County, Wyoming has the most tourism-related employment of counties in the study area, as discussed earlier.

Wages

Average Annual Wages (total annual pay divided by total employment) can provide a sense of how employment opportunities vary across the study area. Average Annual Wages are higher in Teton County, Wyoming than in each of the Idaho counties. Government wages are also higher than private sector wages in each of the counties in the study area which is typical of more rural locations but not for the United States as a whole. Industries that contain travel and tourism often pay relatively low wages, and this is also reflected in the study area data. When comparing wage levels, it is also useful to remember that many travel and tourism related jobs are seasonal and/or part-time. **Table 3.4-3** summarizes the wages and employment of the study area counties.

⁶¹ U.S. Department of Commerce and U.S. Department of Labor 2021

⁶² Ibid.

⁶³ Ibid.

Table 3.4-3. Wages and Employment of Study Area Counties, 2020

Area	Teton County, WY	Madison County, ID	Teton County, ID	Bonneville County, ID	Combined Area	United States
All Sectors	\$62,738	\$35,917	\$42,282	\$44,363	\$46,636	\$67,022
Private	\$61,734	\$34,798	\$41,482	\$43,997	\$46,014	\$67,257
Travel & Tourism	\$40,473	\$13,799	\$28,087	\$18,868	\$27,777	\$29,362
Non-Travel & Tourism	\$77,194	\$33,534	\$44,109	\$48,758	\$51,109	\$73,164
Government	\$69,431	\$42,542	\$47,329	\$46,978	\$50,853	\$65,713

Source: U.S. Department of Commerce and U.S. Department of Labor 2021

GRAND TARGHEE RESORT

Visitation

GTR is a four-season resort whose primary purpose is for winter recreation. Over the past ten years, GTR has experienced modest growth in winter and summer visitation, with stronger growth reported in the last several years. Annual winter visitation between the 2016/17 and 2020/21 winter seasons experienced a growth rate of approximately 6.4 percent per year. Visitation in the 2020/21 season was estimated at approximately 231,000 guests. Annual summer visitation remains much lower than annual winter visitation, reaching its peak in recent years (2021) with an estimated 33,000 visits. Between 2016 and 2021, summer visitation had an average annual growth rate of approximately 9 percent.

Employment

Based on information shared in 2022, GTR has employed an average of approximately 150 full-time employees (FTEs) in the winter and approximately 70 FTEs in the summer, as well as 62 year-round FTEs in the preceding years. These FTEs include both full-time employees as well as combined hours of part-time employees. In 2021/22, GTR had approximately 570 positions, ~90 percent of which are seasonal and/or part-time.⁶⁴ On weekends and holidays when more part-time employees are working, the number of employees at the resort exceeds the FTE count. These are direct resort jobs (i.e., employees of GTR) and are ongoing employment positions that are created each year as a result of visitation to GTR.

Table 3.4-4 summarizes the existing employment at GTR.

Table 3.4-4. Grand Targhee Resort Employment

Category	FTEs
Year-Round	62
Winter	150
Summer	70
Total	282

Source: GTR

Economic Impact of Grand Targhee Resort on the Study Area Economy

It was estimated that GTR's winter visitors have spent approximately \$38.9 million and GTR's summer visitors spend approximately \$4.5 million each year in the local economy related to their visit to Grand Targhee. These estimates are based on the existing visitation level (five-year average visitation 2016/17-2020/21), the breakdown between overnight visitors and day visitors, and the resulting spending patterns of each visitor type.

⁶⁴ Communication with Grand Targhee Resort, January 2022.

As derived through the IMPLAN model, the *direct* winter spending of approximately \$38.9 million generates a total annual output of approximately \$56.1 million, and *direct* summer spending of approximately \$4.5 million generates a total of approximately \$6.6 million within the study area economy. These numbers include *direct*, *indirect*, and *induced* impacts. Winter spending supports approximately 568 FTEs and \$20.7 million in labor income and summer spending supports approximately 70 FTEs and \$2.4 million in labor income.⁶⁵ This spending contributes to seasonally employed FTEs at GTR, as well as other FTEs supported by GTR's visitor spending at other businesses in the study area. Winter and summer economic impacts are also estimated to generate approximately \$10.4 million and \$1 million respectively in taxes each year from economic activity.

COUNTY TAX REVENUE

The Idaho State Tax Commission collects most Idaho taxes and distributes the revenue to counties and municipalities, but property taxes are collected by counties. The study area counties in Idaho (Teton, Bonneville, and Madison counties) had property tax revenues ranging from approximately \$18 million in Teton County, ID to approximately \$106 million in Bonneville County.^{66,67} In Teton County, Wyoming, total tax revenue was approximately \$40 million in 2020.⁶⁸ Sales and use tax was the primary contributor to this revenue, followed by property taxes.⁶⁹

Taxes in nearly all study area counties (Bonneville, Teton, Idaho and Teton, Wyoming) were primarily distributed to schools. In Madison County, taxes were primarily spent on roads, the sheriff's department, and general operations.⁷⁰

GTR pays property taxes for its operations on privately owned land and residential developments in Teton County, Wyoming. GTR has purchased and developed employee housing in Driggs, Idaho, and is paying property taxes on that land and improvements. Otherwise, GTR does not have operations or land in Idaho, and it does not pay taxes to the other study area counties. Additionally, based on projections from the IMPLAN model, the combined economic activity associated with winter and summer visitation at GTR generates approximately \$11.4 million in total tax impacts (based on five-year average visitation levels 2016/17 – 2020/21). Refer to the **Socioeconomics Technical Report** for more information on how this number was generated.

FEDERAL LAND PAYMENTS

The study area counties received a range of approximately \$201,000 to \$2.8 million in federal land payments from the forest service and Payment in Lieu of Taxes (PILT). Teton County, Wyoming had the highest amount of federal land payments, which were approximately \$1.1 million more than the next

⁶⁵ The Congressional Labor Office defines labor income as income that is derived from employment. This includes all compensation that is a return from work effort, and typically includes labor earnings (wages and salaries), employer-provided benefits (health insurance, life insurance, etc.) and taxes paid to the government on behalf of the employees. Employment created by the operation of and visitation to GTR produces labor income for employees and businesses in the study area counties.

⁶⁶ Idaho State Tax Commission 2021

⁶⁷ Bonneville County & State of Idaho 2020

⁶⁸ Teton County Wyoming 2020

⁶⁹ Ibid.

⁷⁰ City of Rexburg 2019

highest, which was Bonneville County. A summary of federal land payments by study area county is included in **Table 3.4-5** below.

Table 3.4-5. Federal Land Payments to State and Local Governments by Study Area County (FY 2019)

	Teton County, ID	Teton County, WY	Bonneville County, ID	Madison County, ID
PILT	\$200,538	\$2,046,045	\$1,431,308	\$111,209
Forest Service Payments	\$82,065	\$374,036	\$299,476	\$88,026
BLM Payments	\$1,025	\$411	\$4,420	\$1,927
USFWS Refuge Payments	\$0	\$400,605	\$4,606	\$0
Total Federal Land Payments	\$283,628	\$2,821,097	\$1,739,810	\$201,163

Source: U.S. Department of Interior et al. 2020

Forest Service Payments

Counties receive revenue sharing payments from commercial activities on NFS lands, such as oil and gas leasing, livestock grazing, timber harvesting, and special use permit fees such as those paid by GTR. These payments are commonly called “25 percent payments” as counties receive payments based on 25 percent of the 7-year rolling average annual receipts.

In 2000, the Secure Rural Schools and Community Self-Determination Act was passed which offered counties a source of payments that was not tied to annual commercial revenue on National Forests.

Most counties with NFS lands elected to receive the Secure Rural Schools Act Payment and opted not to receive the 25-percent payments. For many counties, 25 percent payments are substantially smaller than the Secure Rural Schools Act Payments. Within the study area, Teton County, Wyoming is the only county that elected to continue to receive the 25 percent payments. All three of the Idaho counties elected not to continue to receive the 25 percent payments.

Importantly, 25 percent payments and Secure Rural Schools payments from the Forest Service must be directed towards local schools and roads within the county they are received, but PILT may be used for any governmental purpose. **Table 3.4-6** summarizes federal land payments to the study area county in 2021.

Table 3.4-6: Federal Land Payments to Study Area County (2021)

County	Annual Secure Rural Schools Payments	Annual 25-percent payments
Teton County, WY	N/A	\$391,452

Teton County, ID	\$94,185	N/A
Madison County, ID	\$87,476	N/A
Bonneville County, ID	\$317,415	N/A

Source: USDA Forest Service 2021b

GTR Special Use Permit Fees

Use of NFS lands under a SUP are subject to fee payment to the United States Treasury. Permit fees for ski areas operating on NFS lands follow a standard formula that involves lift ticket and lesson sales as well as revenues from ancillary services such as rentals, food, lodging, and others. Higher revenues produce a higher fee.

Over the past 10 years, GTR has paid SUP fees to the United States Treasury in various amounts ranging between \$99,111 and \$258,250 (refer to **Table 3.4-7**). These SUP fees are included in the annual calculations for the 25 percent payments made to counties, but do not directly impact the annual Secure Rural Schools Act Payments.

Table 3.4-7: Grand Targhee Special Use Permit Fees (2010-2020)

Year	Fee
2010	\$108,799.07
2011	\$99,111.00
2012	\$111,888.00
2013	\$134,950.00
2014	\$141,675.00
2015	\$176,838.00
2016	\$197,672.00
2017	\$201,054.00
2018	\$258,250.00
2019	\$255,106.94
2020	\$217,961.31

Source: Correspondence with USDA Forest Service, August 2021

Additionally, in February 2023, the Ski Hill Resources for Economic Development (SHRED) Act of 2023 was reintroduced as an effort to improve the outdoor recreation economy in mountain communities.⁷¹ The act enables the Forest Service to retain a portion of the fees paid by ski areas operating on NFS lands. This includes SUP fees. The fees can be used to invest in ski area improvement projects, recreation and visitor services, and wildfire preparedness within the unit in which the ski area operates. Additional funds retained by the Forest Service can be used for other needs such as information and education activities, recreation management, and permit and lease administration elsewhere in the unit as well.

HOUSING

Housing Inventory and Assessment

In the study area counties, there is a general lack of housing availability and affordability for the average wage worker. One metric to consider when evaluating housing costs in an area is the percentage of income spent on housing. A household is *cost burdened* when it pays more than 30 percent of its household income in housing costs, which has the potential to make it vulnerable to evictions and foreclosures and can make some households unable to afford food, healthcare, or transportation. The percentage of cost-burdened households in the study area counties ranged from 15 percent of renters in Bonneville County to 70 percent of renters in Madison County from the most recent available data for each area. In all study area counties except for Bonneville County (where 37 percent of homeowners were cost burdened compared with only 15 percent of renters), renters experienced a higher cost burden than homeowners. The particularly high percentage of cost burdened renters in Madison County is influenced by students at Brigham Young University-Idaho (BYU-I), who often rely on loans, grants, and parental support as sources of income.⁷²

There is also a notable relationship in workforce and housing between Teton County, Wyoming and Teton County, Idaho. Many workers living in Teton County, Idaho travel to Teton County, Wyoming for work.⁷³ Teton County, Wyoming has particularly high housing costs and Teton County, Idaho can provide less expensive ownership and rental options for workers in Teton County, Wyoming.⁷⁴ Employment opportunities in Teton County, Wyoming generally offer higher wages than the Teton County, Idaho job market and have higher average wages (\$60,000 compared to \$40,500 in Teton County, Idaho).⁷⁵ The rise of housing costs in the study area county in recent years, has pushed local workers to move out of the county. This causes cascading effects, as this trend between Teton County, ID and Teton County, Wyoming has been reflected between Teton County, Idaho and other surrounding counties with more affordable housing—as of 2021, approximately 23 percent of employees who worked in Teton County, Idaho (1,245 employees) commuted from outside the county.⁷⁶

⁷¹ Congress.gov 2023

⁷² Eastern Idaho Public Health 2018

⁷³ WSW Consulting et al. 2022

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid.

Other general housing trends within the study area show that even though there is a strong demand to buy homes, the supply is not meeting the demand and home prices are not affordable to the average worker. This is particularly prevalent in Teton County, Idaho and Teton County, Wyoming and threatens the quality of life for residents in all the study area counties. Refer to the **Socioeconomics Technical Report** for more information on housing inventory, trends, and availability for all study area counties.

Affordable Housing

As described previously, all study area counties experience challenges for affordable housing. Bonneville and Madison counties experience similar issues, where residents would need to work more than one job to afford to rent a two-bedroom apartment, and the percentage of households who are cost-burdened is high.

Teton County, Idaho and Teton County, Wyoming experience more severe housing shortages and affordability issues than Madison and Bonneville counties. In recent years, housing costs have outpaced wages. The number of residents workers in both counties is shrinking as population grows, a direct result of housing affordability as workers are being forced to seek affordable housing elsewhere. These challenges with housing are not only displacing residents in both counties but are impacting the local economy and services provided as well. In Teton County, Idaho, the School District, the Teton County Fire Protection District, and Teton Valley Health have seen workers turn down position offers due to concerns about housing costs and are struggling to fill vacant positions.⁷⁷

Employee Housing

In 2021, GTR constructed 16 modular employee housing units with 96 bedrooms total in Driggs, Idaho. The modular houses accommodate a substantial portion of GTR's existing levels of seasonal employees. The Teton Valley Bus service stops at the employee housing complex.

GTR is required by Teton County, Wyoming Land Development Regulations to provide some level of employee housing associated with future development on private land GTR is required by a PUD-PR to build employee housing with certain housing ratios and unit types, effective at buildout of the proposed projects. The PUD-PR also states that employee housing can be constructed off-site in Victor, Idaho or Driggs, Idaho.

Short-Term Rentals

Converting full-time or seasonal homes to short-term rentals can decrease housing availability for residents. Short-term rentals have been reported to impact renters in both Teton County, Wyoming and Teton County, Idaho—in 2021 surveys, 10 to 18 percent of renters reported that they were forced to move because their unit was converted to a short-term rental in Teton County, Wyoming and Teton County, Idaho, respectively.⁷⁸ The difference in these rates is likely because Teton County, Wyoming has more regulations on short-term rentals than Teton County, Idaho, such as required permits and location restrictions.

While studies reporting on the number of short-term rentals in each county vary, they state that short-term rentals are impacting the availability of housing for residents. Additionally, the potential income of these rental properties in both counties is higher than the median rental prices and median monthly mortgage

⁷⁷ Barkdull, B. et al. 2019

⁷⁸ WSW Consulting et al. 2022

payments.⁷⁹ This short-term rental trend is likely to continue to drive up housing costs and property values, reduce available housing stock for locals, and create economic benefits for the property owners engaging in short-term rentals.

PUBLIC/SOCIAL SERVICES

Public and social services include schools, public safety, emergency response, public health services, family services, childcare, and other services provided by counties, cities, and local nonprofit organizations within the study area. Many social service programs and organizations aid individuals living in the community who cannot afford to maintain a healthy and comfortable lifestyle. It is important to note that the employees within these programs also struggle to find or afford local housing, an issue that is impacting the retention and attraction of staff. This in turn impacts the availability or efficiency of services and is an issue for all study area counties.

All study area counties provide similar services, from schools to emergency services such as fire departments and search and rescue. Additionally, the emergency management plans for each county identify hazards such as extreme cold/winter storms, flooding, and wildfires and provide an assessment of the risk for each hazard as well as their frequency and planning and management in case of emergency. Additionally, there are a variety of human services within the study area including hospitals, dentists, and public health programs, however, Teton County, Idaho, Madison County, Idaho, and Bonneville County, Idaho experience high population to provider ratios that range from to 1,530:1 to 2,340:1 which exacerbates the issue of access to healthcare. Conversely, Teton County, Wyoming has one of the best population to provider ratios in the country of 920:1.

PUBLIC TRANSPORTATION/INFRASTRUCTURE

Transportation funding varies by county. Teton County, Idaho is primarily funded by a road and bridge levy collected from property taxes but also requires funding from outside sources to cover operational and maintenance costs. Most infrastructure projects in Teton County, Wyoming are funded by the county's general fund and are within the county's Engineering Department budget.⁸⁰ In Bonneville and Madison counties, roadways are funded by a combination of federal, state, and local sources. Other county funds for roads and other transportation infrastructure are generated from highway user revenue, federal-aid incentive programs, bridge funds, county budgets, and general property tax revenue. Each county has a number of active road and transportation projects and all but Madison County have a transportation plan specific to county transportation and infrastructure. Teton County, Wyoming's 2020 Integrated Transportation Plan specifically focuses on public transit and active modes of transportation, which are identified as priorities.

Additionally, Teton County, Wyoming and GTR share a fiscal relationship to provide the community with public transportation and infrastructure services. In 2015, the Grand Targhee Resort Taxing District was established so that GTR could invoice the county for services such as trail maintenance, environmental

⁷⁹ Jablon 2020

⁸⁰ Teton County Wyoming 2020

education programming, and snow removal.⁸¹ In 2018, the budget for these services was approximately \$215,000.⁸²

VALUES, BELIEFS, AND ATTITUDES

The public comments received during the scoping period for this project provided insight into the values, beliefs, and attitudes of the residents of the study area. Comments related to social-economics and quality of life centered around the following: increased demand for social services and other infrastructure, income disparity in the study area, limited affordable housing and increased demand for it, and real estate (some commenters stated a concern that a hidden purpose of the project is to make Grand Targhee's real estate development more valuable). These values, beliefs, and attitudes are further described in the **Socioeconomics Technical Report**.

3.4.4 Direct and Indirect Environmental Consequences

EFFECTS COMMON TO ALL ALTERNATIVES

The specific economic impacts of the No Action Alternative and each action alternative are disclosed in detail in this section below. Impacts to the overall Social and Economic trends in the study area are expected to remain relatively consistent across each alternative with the scale of impact commensurate with the scale of economic impact and new FTEs creation projected under each alternative. A discussion of the anticipated impacts to these overall social and economic trends (population growth, a travel and tourism-based economy, income and poverty, county tax revenues, federal land payments, housing, human and social services, and values, beliefs, and attitudes) is provided below.

Population

As described previously, population growth in each of the study area counties is predicted to continue through 2029 at rates close to 1 percent. This growth would add an estimated 21,500 new residents to the four study area counties by 2029 beyond 2020 levels. Population projections would vary based on the alternatives, and these variations are described under each Alternative below.

Based on the results of the IMPLAN modeling, the action alternatives would result in new FTEs in the study area as a result of increased winter and summer visitor spending, ranging from a high of approximately 614 new FTEs under the Proposed Action to a low of 234 new FTEs under Alternative 1. It is important to note that one FTE does not necessarily equate to one new person moving to the region. One FTE may represent several part-time or seasonal employment positions that could be filled and some new employees arrive with additional family members as well. While many of the new employment positions potentially created under the action alternatives could be expected to be filled by the existing workforce in the region, some new residents may be required given the presently low unemployment rates.

The majority of employees who relocate to work at GTR would likely move to Teton County, Idaho as that is where most GTR employees currently reside, is the closest commercial services/residential center to GTR, and where GTR's existing employee housing is located. If all new FTEs moved to Teton County, Idaho, even in the Proposed Action's higher scenario, they would be captured within baseline growth rates

⁸¹ Teton County Wyoming 2018

⁸² Ibid.

projected for the East Idaho region, and it is feasible that any new person who might move to the region to fill newly created FTEs from the alternatives may be within this projected baseline growth. However, as there has been a trend of population growth and a single FTE may equate to multiple new residents, slightly higher population growth may occur as well. To note, population growth does have implication for other effects discussed in this section (i.e., county tax revenues, housing, human and social services, public transportation/infrastructure). Therefore, should additional population growth occur, it may further exacerbate challenges listed under these effects.

Refer to **Table 3.4-8** for a summary of background growth rate, additional FTEs in each alternative, and the growth rate associated with the additional FTEs for Teton County Idaho, assuming that the FTEs equate to a single individual and that all are residents of Teton County, Idaho.

Table 3.4-8: FTEs by Alternative associated with Teton County, Idaho

Alternative	Teton County, ID Projected Annual Growth Rate	Projected Teton County, ID Additional Residents (2033)	Additional FTEs Projected by Alternative	Annual Growth rate Associated with FTEs
Alternative 1 – No Action	1.1%	1,650	234	0.19%
Alternative 2 – Proposed Action	1.1%	1,650	614	.5%
Alternative 3 – No SUP Expansion	1.1%	1,650	379	.31%
Alternative 4 – South Bowl, No Mono Trees	1.1%	1,650	509	.41%
Alternative 5 – Mono Trees, No South Bowl	1.1%	1,650	481	.39%

Source: Socioeconomics Technical Report

Economy

The vast majority of economic activity and employment positions supported by GTR's visitation would fall within the travel and tourism sector. Because travel and tourism have long been a primary driver of the Teton County, Wyoming economy, the overall trends and economic conditions in Teton County, Wyoming are expected to remain under the employment growth projected for each alternative.

It is expected each of the alternatives would contribute to the ongoing trend towards a greater reliance on travel and tourism in each of the Idaho counties, and particularly in Teton County, Idaho because of its proximity to GTR, travel and commuting patterns, and its relatively small economy. This trend would likely increase economic effects common to more travel and tourism-oriented economies such as job opportunities with relatively low wages or an increased percentage of employment positions that are seasonal and/or part-time. The Proposed Action would generate the most FTEs (614 FTEs) and thus would have the largest contribution of all action alternatives to this trend. This is followed by Alternative 4 (509 FTEs), Alternative 5 (481 FTEs), and then Alternative 3 (379 FTEs).

Visitation

Visitation at GTR is expected to continue to increase in the next ten years under each alternative, including the No Action Alternative. While winter visitation is expected to vary for Alternatives 2 through 5 related to the proposed projects, summer visitation is expected to increase by the same amount for each action alternative as the proposed summer projects are identical under all action alternatives.

While the projected visitation increase is strong across the alternatives, it is not in line with that of the additional lift capacity (i.e., approximately doubling under the Proposed Action), given the competitiveness of the skier market, lower weekday utilization associated with Grand Targhee, existing pass/ticket structures across the industry, and historical visitation trends experienced across the industry following the installation of new infrastructure and capacity. Under Alternative 4, visitation is actually projected to be higher despite a lower Comfortable Carrying Capacity than under Alternative 5, given the relative appeal of South Bowl over Mono Trees skiing.

As total visitors increase, it is assumed the proportion of overnight visitors would also increase under for each alternative. The percentage of overnight visitors varies slightly by alternative, as overnight visitors are anticipated to increase and make up a larger percentage at the higher levels of visitation, while day visitors remain relatively constant across all alternatives. **Table 3.4-9** provides a summary of winter visitation levels by alternative. Additional details are available in **Appendix D**.

Table 3.4-9. Summary of GTR Winter Visitation by Alternative

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Build-out CCC	3,720	6,170	4,910	5,480	5,600
2032/33 Visitation (assumed projects completion)	249,000	331,000	272,000	303,000	296,000
Average Annual Visitation Growth	0.5%	3.4%	1.3%	2.5%	2.2%
Percent of Overnight Visitors	64%	70%	65%	69%	68%

Source: SE Group 2021

Summer visitation is anticipated to increase as well. Under Alternative 1, annual summer visitation is anticipated to increase beyond the approximately 35,000 visitors seen in 2021 to approximately 42,000 by 2033, 10 years after the ROD. Under all action alternatives (identical set of summer projects), visitation is anticipated to increase to 70,700 by 2033.

For a discussion of specific impacts to visitation under each alternative, refer to their respective sections below.

Visitor Accommodations

The location of the bed base and where guests choose to stay determines where visitor spending occurs. In data collected during the 2020/21 winter season, the largest percentage of overnight guests (66% of total) stayed in the Driggs, Idaho area (52%), followed by at the resort (17%), in Jackson (12%), 3% in Alta,

and elsewhere (16%). Elsewhere likely includes those staying in the Victor area, Rexburg, or Idaho Falls. This encompasses guests staying in rented condos/homes, hotels/motels, timeshares, bed and breakfasts, and with friends/family.

It is assumed that the proportion of guests staying overnight in Jackson, Wyoming would increase with increases in total visitation, and that the percentage staying in Driggs would remain constant. Given these assumptions, it is expected that an additional 100-150 units would be needed to accommodate Grand Targhee guests in the Driggs area. Jackson, Wyoming has an ample winter bed base to accommodate visitor increases, as the area sees higher visitation during the summer. Based on the data of where existing visitors stay, an estimated 300-350 such units may presently exist in the Driggs area. It is important to note that the number of units available in Driggs is likely already on the rise and may continue to rise to accommodate the increased in visitation expected to occur as a result of the recently constructed Colter Lift and in the No Action Alternative.

Visitor Spending

The following **Table 3.4-10** shows the estimated spending profiles developed per skier visit in 2020 dollars. These figures were developed based on data specific to Grand Targhee, where possible, and large data set profiles then correlated to Grand Targhee data. For more information on the data provided in this section and how it was derived, please refer to the **Socioeconomics Technical Report**.

Table 3.4-10. 2020 Spending Profile (Day vs. Overnight; \$2020)

Category	Day Guest		Overnight Guest	
	In-Resort	Off-Resort	In-Resort	Off-Resort
Accommodation	\$ -	\$ -	\$31.28	\$88.50
Food & Beverage	\$6.77	\$7.83	\$25.92	\$29.45
Retail	\$3.72	\$2.62	\$17.64	\$12.69
Recreation Fees/Rentals	\$35.96	\$1.26	\$68.50	\$1.06
Entertainment		\$3.34		\$3.66
Transportation		\$14.55		\$19.75
Other	\$0.63	\$1.37	\$3.41	\$0.35
TOTAL	\$47.09	\$30.98	\$146.75	\$155.47

Source: Socioeconomics Technical Report

The following table shows the percent of spending that is estimated to occur in Idaho under the baseline conditions. With inflation (2.3% average annual), 2033 spending was estimated at 34% above 2020 levels listed in **Table 3.4-10**. As shown in **Table 3.4-11**, no in-resort spending occurs in the State of Idaho, but most off-resort spending does under all categories. The lowest categories for Idaho off-resort spending are

accommodation (given stays in Jackson, and Alta) and transportation (i.e., renting cars at the Jackson airport). Spending in Wyoming is the additive inverse of these figures (i.e., 25.6% of off-resort accommodation spending by overnight guests occurs in Wyoming).

Table 3.4-11. Skier Visit Spending Distribution Percentages - Idaho

Category	Day Guest		Overnight Guest	
	In-Resort	Off-Resort	In-Resort	Off-Resort
Accommodation			0%	74.4%
Food & Beverage	0%	97%	0%	93.0%
Retail	0%	97%	0%	93.0%
Recreation Fees/Rentals	0%	97%	0%	93.0%
Entertainment		97%		93.0%
Transportation		97%		70.6%
Other	0%	97%	0%	93.0%

Source: Socioeconomics Technical Report

The total visitor spending inputs into the IMPLAN model do vary by alternative based on the percentage of overnight guests and where those guests are assumed to staying. For example, with higher total visitation projected under the Proposed Action, leading to more overnight visitors, and as a result, a higher percentage of visitors needing to stay in Wyoming (given the bed base), the spending per visitor that would occur in Wyoming was anticipated to increase relative to Alternative 1.

Summer spending is typically less than winter spending given the lower price of activities at the resort and off-resort (i.e., hiking), the ability to camp or other lower-cost lodging options, and less gear required. The following **Table 3.4-12** shows the percentage of winter spending levels assumed for each spending category.

Table 3.4-12. Estimated Summer Spending as a Percent of Winter Spending

Category	Day Guest		Overnight Guest	
	In-Resort	Off-Resort	In-Resort	Off-Resort
Accommodation	N/A	N/A	70%	70%
Food & Beverage	90%	90%	90%	90%
Retail	80%	80%	80%	80%
Recreation	30%	30%	30%	30%

Entertainment	N/A	100%	N/A	100%
Transportation	N/A	100%	N/A	100%
Other	100%	100%	100%	100%

Source: Socioeconomics Technical Report

County Tax Revenues

While the specific amount of county tax revenue varies by alternative and is disclosed previously, the flow of projected county tax revenues to Teton County, Wyoming and the three Idaho counties remains relatively consistent across the alternatives, with approximately 65 percent of the county tax revenues accruing to Teton County, Wyoming and the remaining 35 percent accruing to the three Idaho counties. IMPLAN modeling does not provide results by type of tax and assumptions were not made to understand the spending by Idaho county.

Federal Land Payments

Higher annual visitation at GTR would increase annual revenues from lift ticket and lesson sales as well as revenues from ancillary services such as rentals, food, lodging, and summer activities. As a result, annual permit fees for GTR's operation on NFS lands would also increase.

Federal land payments, including Forest Service payments, would not change for any of the three Idaho counties in the study area as they have elected to receive the Secure Rural Schools Act Payments which are not tied to changes in annual revenue.

Federal land payments would increase for Teton County, Wyoming under each alternative as the county has elected to receive the 25 percent payments.

Additionally, fees paid by GTR to the Forest Service would be subject to the SHRED Act of 2023, if passed, enabling the Forest Service to retain a portion of GTR's SUP fees for use elsewhere within the forest unit.

Housing

Housing availability and affordability is an ongoing issue in each county in the study area, but Teton County, Idaho and Teton County, Wyoming experience more severe housing shortages and affordability issues than Madison and Bonneville counties. The additional employee housing that would be required to house the FTEs projected under each alternative would contribute to the ongoing issue of the study area's lack of affordable housing. The impact would likely be greatest in Teton County, Idaho as that is where much of the regional workforce and many GTR employees presently reside. The potential for increased visitation is also likely to increase demand for short-term rentals and vacation homes, further straining housing availability and affordability. Seasonality of housing demand may also be exacerbated.

Additionally, due to the lack of affordable housing available within the study area, GTR would need to continue to implement employee housing projects as its staffing needs to grow.

Human and Social Services

Similar to other social and economic resources, demands for human and social services such as schools, emergency services, and public transportation would increase commensurate with the increase in visitors and FTEs projected under each alternative. Impacts would likely be greatest in Teton County, Idaho as that is where much of the regional workforce related to GTR visitation currently reside.

Public Transportation/Infrastructure

The [Traffic and Parking Technical Report](#) includes further information on anticipated transportation impacts. This analysis examines the economic components of transportation and public infrastructure in terms of program funding and state and county tax revenues.

The road network, transportation system, and other public infrastructure throughout the study area would be utilized by both GTR's new visitors and new residents who move to the study area to fill the FTEs projected under each alternative. Increased transportation demand and the associated public infrastructure costs are expected to be commensurate with the level of increased visitor spending and FTEs projected under each alternative. Teton County, Idaho shared that recent funding levels have not been sufficient to address routine maintenance, deferred maintenance, and new investment in necessary road network connections and expansions.⁸³ As has been disclosed in previous sections, the State of Idaho and each county in the study is expected to receive increased tax revenues from each of the alternatives; however, the majority of state and county tax revenues from increased visitation to GTR, as well as any increases in federal land payments, are expected to accrue to Teton County, Wyoming and the State of Wyoming under each alternative.

Values, Beliefs, and Attitudes

Many of the comments related to quality-of-life mentioned issues and concerns present in other resort towns where affordable housing is often lacking and staff shortages can sometimes pose a challenge to operations and threaten quality of life in resort towns. These challenges often force local workers to find housing in other nearby and more affordable towns, exacerbating challenges there. Ambient population growth, especially in the study area, is a reality and would likely have similar impacts. Many scoping comments for this project expressed dislike and concern over this population growth and general trend towards greater reliance on travel and tourism.

Future population growth in the region, the continued trend of growing visitation, and the recently constructed Colter Lift are expected to result in an approximately 29 percent increase (from the five-year 2016/2017 – 2020/21 average) in GTR's winter visitation for the 2032/33 season under the No Action Alternative. The Proposed Action Alternative is a 25 percent annual visitation increase from the No Action Alternative, an increase of approximately 55,000 annual visitors. These projects and potential visitation growth may have both positive and detrimental effects to local quality of life, with additional recreation opportunities and new businesses or business types made viable, along with challenges around the elements listed previously. These impacts are expected to occur gradually over a period of ten years. Additionally, the proposed on-mountain infrastructure expansions and upgrades in alternatives 2 through

⁸³ Communication with Teton County, Idaho, March 2022.

5, like enhanced lifts, trails and guest services offerings, would play an important role in supporting this anticipated increase in visitation.

In addition to impacts to visitation, specific impacts to social service demands and county tax revenues that support these services, income, poverty, and affordable housing, and real estate development approved under the *Grand Targhee Resort Planned Unit Development for Planned Resort* (PUD-PR) are discussed in their respective sections previously.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Visitation

Under the No Action Alternative, increases in visitation (from 2016/17 – 2020/21 levels) would be a result of the recent installation of the Colter Lift for the 2022/23 season, ambient population growth in the region, and overall trends in recreation. By the 2032/33 season, annual winter visitation is estimated at approximately 249,000 under the No Action Alternative, representing an average annual growth rate of approximately 0.5 percent. This represents an approximately 29 percent total increase from 2016/17 – 2020/21 levels. Resort projects located on private lands may still occur; however, increases or decreases to visitation related to these projects are not likely to drive visitation beyond this existing trend of modest growth. The No Action Alternative would not include the construction of additional summer activities. Increases in summer visitation would be due to ambient population growth and recreation trends in the region, which would result in a 20 percent increase in summer visitation, from 29,000 visitors on average from 2017 to 2021, to 42,000 visitors in 2033 season.

Economic Impact of Resort Operations on the Study Area Economy

Based on visitation increase from the 2016/17 – 2020/21 average numerated above, by 2033, new, additional winter visitors to the region are estimated to spend approximately \$17 million each year. This *direct* spending would generate an additional annual output of approximately \$24.4 million into the economy, which includes *direct, indirect, and induced impacts*. Approximately 203 FTEs and \$8.9 million in labor income would be supported within the 4-county area each year as a result of increased winter visitation. The 203 FTEs are in addition to the 568 FTEs supported by GTR winter visitation under baseline conditions. Approximately \$4.4 million in total tax impacts are estimated to be generated each year by this economic activity.

By 2033, the additional summer visitors to GTR (beyond average 2017 – 2021 levels) are expected to spend approximately \$2.6 million each year in the 4-county area. This *direct* spending would generate a total annual output of approximately \$3.6 million into the economy, which includes *direct, indirect, and induced impacts*. Approximately 31 FTEs and \$1.4 million in labor income would be supported each year as a result of increased summer visitor spending. This is in addition to the baseline 70 FTEs supported by GTR summer visitation (average summer visitation from 2017-2021). Approximately \$603,800 in additional tax impacts are estimated to be generated each year by this economic activity.

As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on the 2016/17 – 2020/21 five-year winter visitation average).

ALTERNATIVE 2 – PROPOSED ACTION

Visitation

The Proposed Action is expected to create the greatest winter visitation increase of all the alternatives at approximately 331,000 skier visits in the 2032/33 season and an average annual growth rate of 3.4 percent, a 33 percent increase from projections under the No Action Alternative. The proposed summer and multi-season projects are also expected to result in an increase in summer visitation. This would result in 70,700 summer visitors in the 2033 season, an increase of approximately 102 percent from the 35,000 summer visitors in the summer of 2021 and 144% from the 5-year 2017-2021 summer average (29,000), and 68% from the 2033 estimate of the No Action Alternative (42,000). Impacts of this additional visitation on the visitor experience (e.g. recreation experience, lodging, parking, user conflict) are discussed above under the “Effects Common to All Alternatives” header and in **Section 3.1** and **Section 3.5**.

Economic Impact of Resort Operations on the Study Area Economy

It was estimated that new winter visitors to the region would spend approximately \$44.5 million each year. As derived through the IMPLAN model, this *direct* spending would generate an additional annual output of approximately \$63.5 million into the study area economy, which includes *direct, indirect, and induced impacts*. Approximately 519 FTEs and \$23.3 million in labor income would be generated each year as a result of this spending (an increase of 41% from the existing and additional FTEs generated under the No Action Alternative). Approximately \$11.4 million in total tax impacts are estimated to be generated each year by this economic activity.

It was estimated that new summer visitors to the region would spend approximately \$8.06 million each year. As derived through the IMPLAN model, this *direct* spending would generate a total annual output of approximately \$11.1 million into the economy, which includes *direct, indirect, and induced impacts*. Approximately 95 FTEs and \$4.2 million in labor income would be supported each year as a result of increased summer resort spending. This is in addition to the 70 FTEs supported by GTR summer visitation on average from 2017-2021, and 64 beyond the number generated by additional visitation under the No Action Alternative. Approximately \$1.8 million in total tax impacts are estimated to be generated each year by this economic activity.

As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR’s existing levels of winter and summer visitors presented in the Affected Environment discussion (based on the 2016/17 – 2020/21 five-year winter visitation average).

Construction Impacts

For the purpose of this analysis, construction of the Proposed Action is assumed to be evenly distributed across each construction season through 2033 in the IMPLAN model. 2028 dollars were used to represent the average annual economic impact over the 10 years, with inflation. Construction of the project components would generate a total output of approximately \$14.7 million per year, which includes *direct, indirect, and induced impacts*. Approximately 79 FTEs and \$4.7 million in labor income would be generated annually throughout construction. Approximately \$1.4 million in total tax impacts are estimated to be generated each year by this economic activity. These impacts would be short-term, only affecting the economy during the years in which construction activity would occur.

ALTERNATIVE 3 – NO SUP EXPANSION

Visitation

Alternative 3 is expected to generate approximately 85 percent of the annual winter visitation projected for the Proposed Action, with an average annual growth rate of approximately 1.3 percent. Winter visitation by the 2032/33 season is expected to be approximately 272,000, a nine percent increase from the projected under the No Action Alternative. As the proposed summer projects are the same under each action alternative, summer visitation is expected to increase to 70,700 visitors by the 2033 season, the same as under the Proposed Action.

Economic Impact of Resort Operations on the Study Area Economy

It was estimated that additional winter visitors to the region would spend approximately \$24 million each year under Alternative 3. As derived through the IMPLAN model, this *direct* spending would generate a total annual output of approximately \$34.2 million into the study area economy, which includes *direct, indirect, and induced impacts*. Approximately 284 FTEs and \$12.5 million in labor income would be generated each year as a result of this spending. Approximately \$6.2 million in total tax impacts are estimated to be generated each year by this additional economic activity.

Summer visitation impacts would be same for Alternative 3 as the Proposed Action.

As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on the 2016/17 – 2020/21 five-year winter visitation average).

Construction Impacts

For the purpose of this analysis, construction of Alternative 3 is assumed to be evenly distributed across each construction season through 2033 in the IMPLAN model. 2028 dollars were used to represent the average annual economic impact over the 10 years, with inflation. Construction of the project components would generate a total output of approximately \$11 million per year, which includes *direct, indirect, and induced impacts*. Approximately 59 FTEs and \$3.5 million in labor income would be generated annually throughout construction. Approximately \$1 million in total tax impacts are estimated to be generated each year by this economic activity. These impacts would be short-term, only affecting the economy during the years in which construction activity would occur.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Visitation

Alternative 4 is expected to generate approximately 93 percent of the winter visitation projected for the Proposed Action, with an average annual growth rate of approximately 2.5 percent. Winter visitation by the 2032/33 season is expected to be approximately 303,000, a 22 percent increase from that projected under the No Action Alternative. As the proposed summer projects are the same under each alternative, summer visitation is expected to be the same as under the Proposed Action.

Economic Impact of Resort Operations on the Study Area Economy

It was estimated that new winter visitors to the region would spend approximately \$35.4 million each year. As derived through the IMPLAN model, this *direct* spending would generate a total annual output of

approximately \$50.5 million into the study area economy, which includes *direct, indirect, and induced impacts*. Approximately 414 FTEs and \$18.5 million in labor income would be generated each year as a result of this additional visitation. Approximately \$9.1 million in total tax impacts are estimated to be generated each year by this economic activity.

Summer visitation impacts would be same for Alternative 4 as the Proposed Action.

As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on the 2016/17 – 2020/21 five-year winter visitation average).

Construction Impacts

For the purpose of this analysis, construction of Alternative 4 is assumed to be evenly distributed across each construction season through 2033 in the IMPLAN model. 2028 dollars were used to represent the average annual economic impact over the 10 years, with inflation. Construction of the project components would generate a total output of approximately \$12.1 million per year, which includes *direct, indirect, and induced impacts*. Approximately 65 FTEs and \$3.9 million in labor income would be generated annually throughout construction. Approximately \$1.1 million per year in federal, state, county, and town taxes would be generated by the construction activity. These impacts would be short-term, only affecting the economy during the years in which construction activity would occur.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Visitation

Alternative 5 is expected to generate approximately 91 percent of the winter visitation projected for the Proposed Action, with an average annual growth rate of approximately 2.2 percent. Winter visitation by the 2032/33 season is expected to be approximately 296,000, a 19 percent increase from forecast conditions under the No Action Alternative. As the proposed summer projects are the same under each alternative, summer visitation is expected to be the same as under the Proposed Action.

Economic Impact of Resort Operations on the Study Area Economy

It was estimated that new winter visitors to the region would spend approximately \$32.9 million each year. As derived through the IMPLAN model, this *direct* spending would generate a total annual output of approximately \$47 million into the study area economy, which includes *direct, indirect, and induced impacts*. Approximately 386 FTEs and \$17.2 million in labor income would be generated each year as a result of this additional spending. Approximately \$8.5 million in total tax impacts are estimated to be generated each year by this economic activity.

Summer visitation impacts would be same for Alternative 5 as the Proposed Action.

As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on the 2016/17 – 2020/21 five-year winter visitation average).

Construction Impacts

For the purpose of this analysis, construction of Alternative 5 is assumed to be evenly distributed across each construction season through 2033 in the IMPLAN model. 2028 dollars were used to represent the

average annual economic impact over the 10 years, with inflation. Construction of the project components would generate a total output of approximately \$12.6 million per year, which includes *direct, indirect, and induced* impacts. Approximately 68 FTEs and \$4 million in labor income would be generated annually throughout construction. Approximately \$1.2 million per year in federal, state, county, and town taxes would be generated by the construction activity. These impacts would be short-term, only affecting the economy during the years in which construction activity would occur.

3.4.5 Cumulative Effects

SCOPE OF THE ANALYSIS

The effects analyzed in the Cumulative Effects discussion apply to all action alternatives and No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the Grand Targhee SUP area and on adjacent NFS and private lands, as well as throughout the study area.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for social and economic resources extend from GTR's inception in 1969 through the foreseeable future in which the resort can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for social and economic resources are limited to public and private lands within the study area (Teton County, Wyoming; Teton County, Idaho; Madison County, Idaho; and Bonneville County, Idaho).

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the project area, the reader is referred to **Appendix A** in this EIS. Past ski area and county development projects have been incorporated and analyzed in this document as part of the *Affected Environment* discussion.

Forest Service decisions within the Grand Targhee SUP area, as well as the approval of private land development by Teton County, Wyoming, have contributed to economic growth trends within the county over the past few decades. As previously stated, travel and tourism is an important economic component of the study area, and GTR is an important part of this economic sector. GTR attracts both visitors and employees. As GTR grows, they would hire more employees and attract new visitors, incrementally adding to the economic and social impacts to the region. As noted, the estimation of economic impacts is related to visitation, as expenditures by visitors generate industry sales and support new jobs.

The PUD-PR could have cumulative impacts on social and economic resources and is analyzed below.

Grand Targhee Resort 2019 First Amended Master Plan - Planned Unit Development for Planned Resort

About the PUD-PR

The *Grand Targhee Resort First Amended Master Plan* was adopted on February 12, 2019, and it would expire on February 12, 2024, if there is no sufficient application for physical development filed with the Teton County Planning Department. The Plan was established by Section 4.3.7 of the Teton County Land

Development Regulations (the “LDRs”). The plan approved a total of 450 residential/accommodation units and 12,300 sf for commercial and resort services for GTR.

The amendment was pursued for multiple reasons, including the following:

1. To better reflect the resort’s “current economic operating conditions”
2. To reflect plans and regulations adopted since 2008 (the 2012 Jackson/Teton County Comprehensive Plan and the 2016 County LDRs, 2017 updated Caribou-Targhee NF MDP, update the resort’s phasing plan
3. To revise and replace environmental mitigation conditions (included in this amended MP as a Community Services Element)

Cumulative Impact of the PUD-PR

No portion of the implementation of projects approved under the PUD-PR are dependent, reliant, or connected to approval of any of the action alternatives by the Forest Service. GTR has been advancing projects on private land from the PUD-PR since their approval and would implement these projects regardless of projects being approved under this analysis. Implementation of the projects in the PUD-PR is not expected to drive additional visitation beyond the visitation levels analyzed for each alternative in this section under Direct and Indirect Environmental Consequences. However, the development of these units could impact the spending patterns of GTR’s visitors in terms of the location of the guests’ lodging and associated visitor spending. The purpose of the approved projects in the PUD-PR is to provide for a mix of recreational, retail, and service-oriented activities, that provides economic and other benefits to the community.

Whether annual visitation figures would increase at Grand Targhee should the previously approved accommodation units be constructed is a question of a) whether that lodging would serve as an amenity or attraction; and b) whether such lodging would provide accommodation capacity to allow Grand Targhee to increase visitation levels from those projected in Direct and Indirect figures. These factors are discussed further in the **Socioeconomics Technical Report**.

In general, the development of additional residential, resort, and commercial development at the base of GTR allows a higher percentage of guests to lodge at the resort and shifts more of the economic impacts into Teton County, Wyoming where the resort is located. While this is true of the visitor spending, FTE creation, and tax revenues projected by the IMPLAN model, it is still likely that many of the employees supporting GTR would be located in Teton County, Idaho. This is where most GTR employees currently live and the PUD-PR allows for GTR’s required employee housing to be constructed off-site in Victor or Driggs, Idaho.

The results of these anticipated shifts in spending patterns are displayed in the IMPLAN modeling for each alternative below. While visitation remains the same, winter economic impact in Wyoming is expected to be 2 percent to 31 percent higher (with a corresponding decrease in Idaho economic impact, dependent on alternative).

Summary of Cumulative Effects by Alternative

Table 3.4-13 summarizes the following sections, which describe the anticipated cumulative effects of the PUD-PR for each alternative.

Table 3.4-13. Summary of Cumulative Effects by Alternative

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Additional FTEs (compared to existing conditions)	232	621	377	515	487
2032/33 Visitation	Development of the PUD-PR is independent from implementation of alternatives and is not expected to drive additional visitation beyond the visitation levels described in Direct and Indirect Effects				
Wyoming Spending Proportions	56% (winter) 74% (summer)	68% (winter) 83% (summer)	67% (winter) 83% (summer)	68% (winter) 83% (summer)	68% (winter) 83% (summer)
Economic Impacts (total annual output)	\$24.8 million (winter) \$3.1 million (summer)	\$67.3 million (winter) \$9.1 million (summer)	\$36.8 million (winter) \$9.1 million (summer)	\$54.1 million (winter) \$9.1 million (summer)	\$50.5 million (winter) \$9.1 million (summer)

Alternative 1 – No Action (Cumulative Effect)

Visitation

While the development of residential units approved through the PUD-PR is not expected to drive additional visitation beyond the visitation levels analyzed for each alternative in this section under Direct and Indirect Environmental Consequences, the development of these units could have an effect on the spending patterns of GTR's visitors in terms of the location of the guests' lodging and associated visitor spending. This is true for all alternatives.

Economic Impact of Resort Operations on the Study Area Economy

Under the Cumulative conditions, where a greater proportion of spending has been shifted to Wyoming with additional lodging units, 56 percent of the additional winter economic output would occur in Wyoming. In comparison, 55 percent occurs in Wyoming as analyzed under Affected Environment. There would be a corresponding shift in FTEs created and taxes. Additionally, 74 percent of the additional summer economic output would occur in Wyoming. In comparison, 70 percent occurs in Wyoming as analyzed under Affected Environment.

Total economic output, jobs created, and taxes do not vary substantially when considering the study area as a whole. As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on 2016/17 – 2020/21 five-year average visitation).

Alternative 2 – Proposed Action (Cumulative Effect)

Visitation

Refer to the discussion of visitation under Alternative 1 – No Action (Cumulative Effect).

Economic Impact of Resort Operations on the Study Area Economy

Under the Cumulative conditions, where a greater proportion of spending has been shifted to Wyoming with additional lodging units, 68 percent of the additional winter economic output would occur in Wyoming. In comparison, 55 percent occurs in Wyoming as analyzed under Affected Environment. There would be a corresponding shift in FTEs created and taxes. Additionally, 83 percent of the additional summer economic output would occur in Wyoming. In comparison, 76 percent occurs in Wyoming as analyzed under Affected Environment.

Total economic output, jobs created, and taxes do not vary substantially when considering the study area as a whole. As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on 2016/17 – 2020/21 five-year average visitation).

Alternative 3 – No SUP Expansion (Cumulative Effect)

Visitation

Refer to the discussion of visitation under Alternative 1 – No Action (Cumulative Effect).

Economic Impact of Resort Operations on the Study Area Economy

Under the Cumulative conditions, where a greater proportion of spending has been shifted to Wyoming with additional lodging units, 67 percent of the additional winter economic output would occur in Wyoming. In comparison, 48 percent occurs in Wyoming as analyzed under Affected Environment. There would be a corresponding shift in FTEs created and taxes. Summer visitation impacts and the distribution would be same as the Proposed Action.

Total economic output, jobs created, and taxes do not vary substantially when considering the study area as a whole. As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on 2016/17 – 2020/21 five-year average visitation).

Alternative 4 – South Bowl, No Mono Trees (Cumulative Effect)

Visitation

Refer to the discussion of visitation under Alternative 1 – No Action (Cumulative Effect).

Economic Impact of Resort Operations on the Study Area Economy

Under the Cumulative conditions, where a greater proportion of spending has been shifted to Wyoming with additional lodging units, 68 percent of the additional winter economic output would occur in Wyoming. In comparison, 55 percent occurs in Wyoming as analyzed under Affected Environment. There would be a corresponding shift in FTEs created and taxes. Summer visitation impacts and the distribution would be same as the Proposed Action.

Total economic output, jobs created, and taxes do not vary substantially when considering the study area as a whole. As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on 2016/17 – 2020/21 five-year average visitation).

Alternative 5 – Mono Trees, No South Bowl (Cumulative Effect)

Visitation

Refer to the discussion of visitation under Alternative 1 – No Action (Cumulative Effect).

Economic Impact of Resort Operations on the Study Area Economy

Under the Cumulative conditions, where a greater proportion of spending has been shifted to Wyoming with additional lodging units, 68 percent of the additional winter economic output would occur in Wyoming. In comparison, 56 percent occurs in Wyoming as analyzed under Affected Environment. There would be a corresponding shift in FTEs created and taxes. Summer visitation impacts and the distribution would be same as the Proposed Action.

Total economic output, jobs created, and taxes do not vary substantially when considering the study area as a whole. As these impacts would result from new visitation to the region, they would be created each year *in addition to* the baseline impact of GTR's existing levels of winter and summer visitors presented in the Affected Environment discussion (based on 2016/17 – 2020/21 five-year average visitation).

3.4.6 Irreversible and Irretrievable Commitments of Resources

Under the action alternatives, there would be a commitment of social and economic resources in the form of construction labor, long-term employment, housing, and social services. These commitments are not considered irreversible and/or irretrievable as they would be either temporary (e.g., construction labor) or consistent with baseline trends (e.g., housing and social services); therefore, no irreversible and/or irretrievable commitment of economic resources have been identified in association with either of the alternatives analyzed in this document.

3.5 Traffic and Parking

3.5.1 Scope of the Analysis

This analysis summarizes the *Traffic and Parking Technical Report for the Grand Targhee Master Development Plan Projects Environmental Impact Statement*, referred to as the [Traffic and Parking Technical Report](#).⁸⁴ This section includes an analysis of existing and anticipated future traffic volumes, a quantification of existing and proposed parking supply for day and destination visitors to GTR under existing and proposed conditions, and a discussion of potential impacts from construction traffic and access routes. Refer to the **Traffic and Parking Technical Report** for more information on methodology, data sources, definitions, 1997 Forest Plan direction, and traffic data.

This analysis focuses on the primary roadways used to access GTR and the related parking and traffic issues at the resort. These roadways are Ski Hill Road, Idaho State Highway (SH) 33, Idaho SH 31, and Wyoming State Highway 22 (WY-22).

3.5.2 Affected Environment

This section of the report documents the existing traffic conditions within the roadway network used to access GTR. Information in this section serves as the baseline for the traffic impacts of the alternatives due to increased trips both during construction and after completion of the proposed projects.

RESORT ACCESS

GTR's visitor mix is a relatively even distribution of local users, regional destination visitors, and national destination visitors or those from across the United States. Local guests drive to the resort or make use of the Teton Valley Bus Service provided by GTR. Regional destination visitors drive and stay overnight. National destination visitors fly or drive long distances. Those flying into the region primarily fly through Jackson Hole Airport, Salt Lake City Airport, or Idaho Falls Airport.⁸⁵

In recent years, overnight visitors to the region, encompassing both regional destination visitors and national destination visitors, have been more than 60 percent of GTR's skier visits.⁸⁶ Overnight visitors largely stay at the resort, in Alta, Wyoming, in Driggs or Victor, or in Jackson. Guests staying off-resort can drive to the resort using a personal or rented vehicle or take the Teton Valley Bus Service.

⁸⁴ SE Group 2023d

⁸⁵ RRC 2021

⁸⁶ Ibid

GTR is located at the end of Ski Hill Road. Ski Hill Road, or Forest Highway 76, is the only road that provides access to GTR. Many GTR guests access the resort and Ski Hill Road via SH 33, which turns into WY-22 at the Wyoming border. There is also an alternate route using US 26 to SH 31 to Swan Valley, intersecting with SH 33 in Victor, and then following SH 33 north through Driggs to Ski Hill Road. For more information on routes to GTR, refer to the **Traffic and Parking Technical Report**.

All of the GTR parking lots and lodging are accessed directly from Ski Hill Road at the base of the resort. There are no other roadways that are used to access the on-mountain recreational opportunities or lodging in the base area.

TRAFFIC

On weekends and holidays, the traffic leading up to GTR can create backups, which sometimes extends into Driggs. Snow and other weather conditions frequently impact traffic congestion as well, as roadways may close, or drivers may travel at a slower speed. Many of the roadways in the study area see higher traffic volumes in the summer, excluding Ski Hill Road, the access road to GTR.

Traffic Volumes

Table 3.5-1 lists annual average daily traffic (AADT) from various sources, average traffic counts from 6 days over the past 2 seasons when resort visitation was closest to the winter CCC, and the average count from all Saturdays in July and August from 2020 to 2022. These latter values provide traffic volumes which best approximate the use of a given highway section on a busy day during the winter and summer seasons. These CCC days reflect the busier days at GTR over the past three seasons. Refer to the **Traffic and Parking Technical Report** for more information on this data. Counter locations are shown in **Exhibit 3.5-1** below and represent all available, monthly counters in the study area.⁸⁷ All listed volumes are two-way.

⁸⁷ Several counters located on County Roads are seasonal and do not provide data for the winter season.

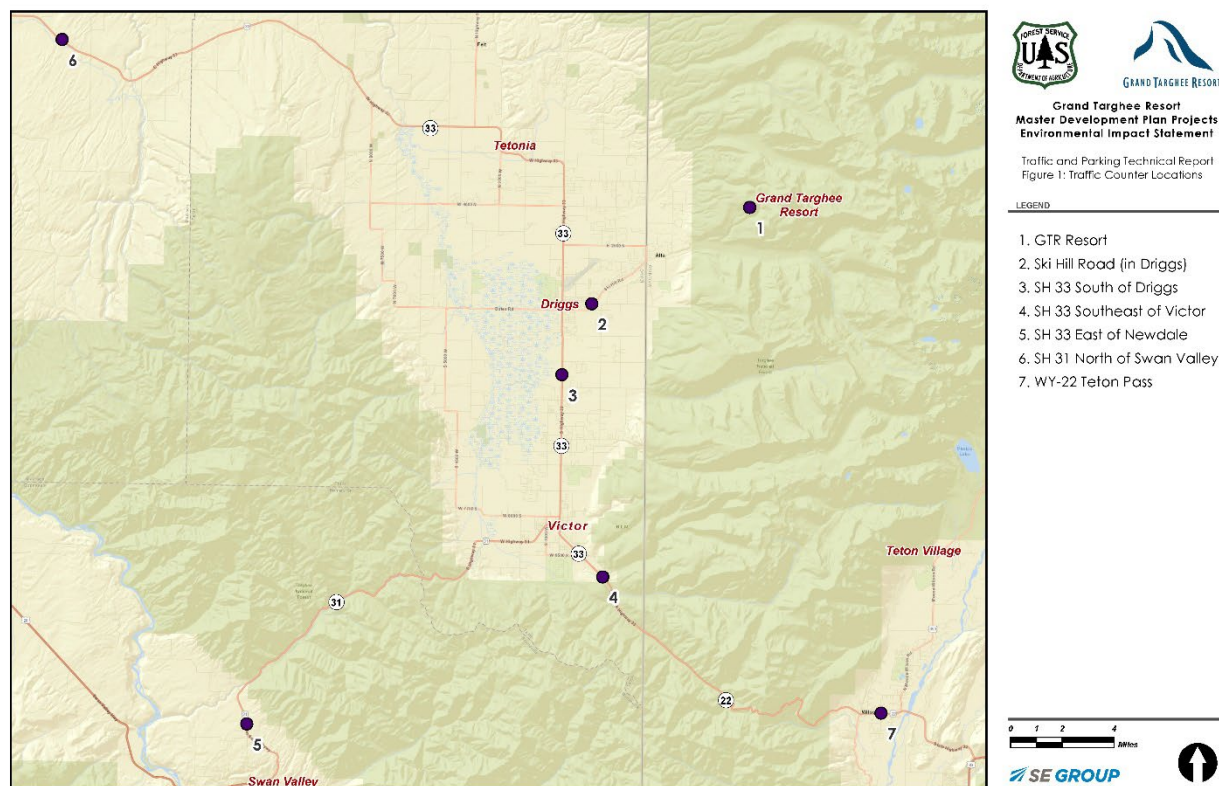


Exhibit 3.5-1. Traffic counter locations near GTR used in this analysis.

The existing CCC at GTR is 3,720 skier visits. CCC-based traffic counts reflect the average of the 6 days when visitation best approximated CCC from the 2021/22 and 2022/23 winter seasons. As indicated by **Table 3.5-1**, on a winter CCC day, there would be an estimated 1,660 vehicles seeking to access the resort, resulting in 3,320 total vehicle trips (two-way).

Average traffic counts from all Saturdays in July and August from 2020 to 2022 provide traffic volumes which best approximate the use of a given highway section on a busy summer day. As indicated by **Table 3.5-1**, on a busy summer day, there would be an estimated 540 vehicles seeking to access the resort, resulting in 1,080 vehicle trips (two-way).

Table 3.5-1. Existing Traffic Counts at Key Locations (Two-way)

Location (by Proximity to Resort)	2021 AADT	2021-2023 Winter CCC Day Adjusted Count	2020-2022 Summer Saturday Average Count
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	1,040 (2020/21)	3,320	1,080
2. Ski Hill Road (just east of the fork with Cemetery Road)	3,828	4,839	4,452
3. SH 33 (2.4 miles south of Driggs traffic light)	10,340	8,596	12,005

Location (by Proximity to Resort)	2021 AADT	2021-2023 Winter CCC Day Adjusted Count	2020-2022 Summer Saturday Average Count
4. SH 33 (2.8 miles southeast of Victor)	7,351	5,012	8,902
5. SH 33 (5.8 miles east of Newdale)	2,932	2,776	3,929
6. SH 31 (3.5 miles north of Swan Valley)	2,779	1,885	4,060
7. WY-22 (west of WY-390)2	10,019	7,651	13,986

Source: WYDOT, ITD, GTR, SE Group

Notes:

1. Extrapolated daily data based on Counter #4, located east of Victor.

2. This counter captures vehicular traffic in Wilson and these counts are likely higher than the number of vehicles traveling over Teton Pass.

On several of the roadways considered in this analysis, traffic volumes are higher on an annual basis than on busy days during the winter season at GTR. At every counter other than the one located at the GTR entrance, summer Saturday counts are 35 to 90 percent higher than AADT values. With the counter located at the base of Ski Hill Road, a large portion of the traffic on the roadway is not headed to GTR, particularly when reviewed on an annual basis or during the summer. There are likely more than 1,000 vehicles that pass the Ski Hill Road counter in Driggs that are not going to GTR on CCC winter days.⁸⁸

Not all visitors to GTR would pass the Ski Hill Road Driggs counter such as those using Stateline Road when traveling from the north or south. It was estimated that ~60 percent of those traveling to GTR by personal vehicle pass that counter.⁸⁹

Level of Service

Level of Service (LOS) is a planning level analysis in the Highway Capacity Manual, Third Edition, developed by the Transportation Research Board (TRB) to measure conditions on rural highways and roadways. LOS for roadways ranges from LOS A to LOS F, where LOS A describes primarily free-flow operations at average travel speeds and LOS F characterizes flow at extremely low speeds below one-third to one-fourth of the free-flow speed. Refer to the **Traffic and Parking Technical Report** for descriptions of each LOS.

Table 3.5-2 shows the LOS at each counter for average daily traffic in 2021, on days when visitation approximated the CCC from 2021 to 2023, and on the average daily traffic of summer Saturdays from 2020 to 2022.⁹⁰

⁸⁸ ITD, 2023. Jorgensen, 2020. GTR, 2021.

⁸⁹ Estimate based on Jorgensen, 2020.

⁹⁰ A k-factor (a measure of the concentration of traffic within a single hour) of .11 was used in this analysis for winter as determined by reported hourly and daily roadway traffic volumes.

Table 3.5-2. Existing LOS at Key Locations

Location (by Proximity to Resort)	LOS Terrain Type	2021 AADT	2021-2023 Winter CCC Day Average Count	2020-2022 Summer Saturday Average Count
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	Mountainous	B	D	B
2. Ski Hill Road (just east of the fork with Cemetery Road)	N/A ⁹¹	C	C/D	C/D
3. SH 33 (2.4 miles south of Driggs traffic light)	Level	C/D	C/D	D
4. SH 33 (2.8 miles southeast of Victor)	Rolling	D	C	D/E
5. SH 33 (5.8 miles east of Newdale)	Level	A/B	A/B	B
6. SH 31 (3.5 miles north of Swan Valley)	Rolling	B	A/B	B/C
7. WY-22 (west of WY-390)	Rolling ⁹²	D/E	D	E

Source: SE Group, Transportation Research Board

The above table shows that traffic conditions vary throughout the study area and by time of year. This analysis shows potential declines in vehicle speed or delays at the resort entrance on winter CCC days, and on SH 33 south of Driggs and Victor on busy summer Saturdays, and on WY-22 during all periods.

Traffic volumes on these roadways have been growing over the past few years. Average annual growth rate for summer and winter traffic for each roadway ranges from 3.1 to 6.4 percent in the winter and from 1.1 to 5.8 percent in the summer between 2016-2022. Growth rates were highest at SH 33 (5.8 miles east of Newdale) in the summer and at SH 31 (3.5 miles north of Swan Valley) in the winter. Growth rates were lowest at WY-22 (west of WY-390) in the summer and at Ski Hill Road (just east of the fork with Cemetery Road) in the winter. These growth rates represent background growth occurring in the study area.

Collision Data

The State of Idaho Local Highway Technical Assistance Council (LHTAC) provides spatial data on reported vehicular crashes from 2017 to 2021. Between 2017-2020, from the intersection of Little Avenue to Ski Hill Road at the Wyoming border, there were five crashes reported, none resulting in injuries or fatalities.⁹³ These crashes consisted of two wildlife/vehicle collisions, two rear-endings, and one vehicle

⁹¹ Not classified as Rural Highway, capacity separately provided as 10,200 vehicles per day.

⁹² While WY-22 includes mountainous stretches over Teton Pass, this counter is located in Wilson, WY and likely a large portion of the traffic at the counter does not go over Teton Pass

⁹³ LHTAC, 2021.

losing control on snow/ice. No crashes were reported from summer 2020 to the end of 2021. Overall, the sample size of this data is too small to extract conclusive trends.

TRANSIT

Daily transit access to GTR is provided by GTR as the Teton Valley Bus Service. This route goes from Victor to GTR and back, and offered 15 trips per day between 6 a.m. and 10 p.m. on the 2023-2024 winter schedule. The route makes 8 stops, with two in and around Victor, five in and around Driggs, and one at the resort. Ridership in 2017 was approximately 20,000 and approximately 75 percent of riders were employees.⁹⁴ Park and ride options are offered at the Driggs Transit Center, the 5th Street Skate Park in Driggs, and at the Victor Depot for guests to board the bus. GTR also provides a by-request paid shuttle from the Jackson Hole Airport and Idaho Falls Airport and a shuttle from outlying parking areas.

Transit ridership varies by season. It is estimated that 18 percent of local day guests and 30 percent of employees take transit on busy, capacity days during the winter season. During the summer, it was estimated that transit ridership was at 5 percent of day guests (1.6 percent of all guests not staying on resort and 1.2 percent overall) and 15 percent of employees on busy days. Refer to the **Traffic and Parking Technical Report** for more information on existing ridership.

PARKING

GTR has four parking lots for public skier use, all of which are located on private land. These parking lots are shared by employees, overnight, and day guests, except for approximately 24 spaces by Sioux Lodge dedicated to lodge guests. **Table 3.5-3** lists each parking lot and the number of spaces as of the 2022/23 season. These figures represent available winter parking spaces when snow storage is occurring. During the summer, an estimated 70 additional parking spaces are available.⁹⁵

Table 3.5-3. Existing Parking Lots

Name	Base Area Access	Spaces
Lot 1	Walk-to	320
Lot 2	Walk-to/Shuttle	140
Lot 3	Walk-to/Shuttle	485
Lot 4	Shuttle	320
Overflow	Shuttle	190
Total		1,455

Source: GTR

On busy days in the winter, demand has exceeded parking supply, and cars have waited or been turned away when spaces are not available (prior to 2021/22, there were 325 fewer available spaces). Beginning

⁹⁴ City of Driggs, 2019.

⁹⁵ Communications with Grand Targhee Resort.

with the 2021/22 season, GTR has a parking section of their website where guests can track the occupancy of the lots and see if there are available spaces prior to driving up.

GTR began tracking occupancy data during the 2020/21 season. Average Vehicle Occupancy (AVO) was calculated through this occupancy data and transit ridership against skier visit counts from busy days; this analysis determined that guest AVO is approximately 2.5 people per vehicle at GTR during the ski season. This figure aligns with the industry standard of 2.5.

Parking and access are planned for GTR's CCC plus 4 percent as some non-skiing guests (i.e., family, tubers, Nordic skiers) would park at the resort. It was assumed that at-one-time (AOT) demand would be 90 percent of guests, given that some guests may arrive in the afternoon after others have already left for the day.

On winter days when visitation is at CCC, there is a slight surplus of parking spaces for the 2022/23 season. On these days, there would be available parking for all those visiting the resort, although unoccupied spaces would largely be in the overflow area. During the summer, there is a strong surplus of available parking spaces even for the busier days. Summer busy days see approximately 800 guests and 220 employees.⁹⁶ During summer events (i.e., Targhee Fest and Bluegrass Festival), shuttles are provided from Driggs for event attendees.

3.5.3 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, the proposed projects on National Forest System (NFS) lands would not be constructed.

Traffic

Under the No Action Alternative, traffic volumes are forecast to increase by the background traffic growth rate. Winter CCC day traffic volumes associated with GTR would not change as CCC would be unchanged from 3,720; traffic associated with GTR would remain at 1,660 vehicles accessing the resort (3,320 vehicle trips two-way). While the frequency of these CCC-volume days may increase, the capacity of facilities and target experience would remain at that level of visitation. All increases shown for winter are attributable to background traffic growth. Summer visitation is expected to increase to 1,010 guests per busy day in summer 2033 (26 percent increase) as the parking and other facilities have additional capacity to allow busy day visitation to continue to grow in the summer. Summer busy day traffic volumes are anticipated to increase to 620 vehicles accessing the resort (1,240 vehicle trips two-way). Refer to **Table 3.5-4** and **Table 3.5-5** for additional detail.

Under the No Action Alternative, CCC day traffic volumes are projected to be unchanged at the resort entrance, but by up to 59 percent at other counters due to the level of background traffic growth anticipated.

In summer, the counter at GTR would see an increase of 15 percent over baseline growth, with all of that increase attributed to the increased visitation. The other counters would experience growth between 24

⁹⁶ GTR 2021

percent and 62 percent with nearly all of that growth attributable to background traffic growth (greater than 94 percent for all counters).

Table 3.5-4. Forecasted Traffic Volumes – No Action Alternative

Location (by Proximity to Resort)	Winter CCC Day			Summer Busy Day			
	2021-2023 Winter CCC Day Adjusted Count	2032/33 Estimated Vehicle Count	% Increase	2020-2022 Count	2033 Estimated Vehicle Count	% Increase	% Increase Attributable to Elevated Visitation
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	3,320	3,320	0%	1,080	1,240	15%	100%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,839	5,780	19%	4,452	5,520	24%	6%
3. SH 33 (2.4 miles south of Driggs traffic light)	8,596	11,900	38%	12,005	17,480	46%	1%
4. SH 33 (2.8 miles southeast of Victor)	5,012	7,160	43%	8,902	12,620	42%	1%
5. SH 33 (5.8 miles east of Newdale)	2,776	4,000	44%	3,929	6,360	62%	1%
6. SH 31 (3.5 miles north of Swan Valley)	1,885	3,000	59%	4,060	5,600	38%	1%
7. WY-22 (west of WY-390)	7,651	10,700	40%	13,986	15,720	12%	1%

Source: WYDOT, ITD, GTR, SE Group

Table 3.5-5. 2032/33 LOS at Key Locations – No Action Alternative

Location (by Proximity to Resort)	Winter No Action LOS	Summer No Action LOS
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	D	B
2. Ski Hill Road (just east of the fork with Cemetery Road)	D	D
3. SH 33 (2.4 miles south of Driggs traffic light)	D	E
4. SH 33 (2.8 miles southeast of Victor)	D	E
5. SH 33 (5.8 miles east of Newdale)	B	B/C

Location (by Proximity to Resort)	Winter No Action LOS	Summer No Action LOS
6. SH 31 (3.5 miles north of Swan Valley)	B	C/D
7. WY-22 (west of WY-390)	D/E	F

Source: SE Group, Transportation Research Board

The analysis of traffic volumes in **Table 3.5-5** illustrates that that under the No Action Alternative, the number of vehicles traveling on roadways accessing GTR may increase. Nearly all of this increase is attributable to background traffic growth described above. All roadways included in this analysis are expected to decrease by a half or whole grade from existing conditions except for Ski Hill Road at GTR by the 2032/2033 season.

Transit

Under the No Action Alternative, the CCC would not increase, and background growth is not anticipated to result in noticeable changes in transit ridership from the existing conditions described under **Section 3.5.2**. Refer to **Section 3.5.4** for a cumulative discussion of potential future transit and ridership patterns in relation to the No Action Alternative.

Parking

Under the No Action Alternative, a small surplus of 30 spaces is anticipated on days when visitation approximates CCC in the winter, forecasted for the 2032/33 season. There remains a strong surplus of available parking during busy days in the summer under the No Action Alternative.

ALTERNATIVE 2 – PROPOSED ACTION

The Proposed Action would result in an increase in comfortable carrying capacity to 6,170 guests per day at GTR. These additional visitors to GTR would generate an increase in vehicle trips and parking demand. It is anticipated that much of this growth would occur through an increase in overnight visitors as a percentage of total guests, given the relatively small and stable local population. The number of local, day visitors would increase as well, but not commensurate with the increase in overnight visitors. It is assumed under the Proposed Action that 70 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing. The number of guests staying on-resort is anticipated to remain relatively constant, with a modest increase to occupancy but no change to available units.

For summer, the additional capacity and draw presented by the new activities offered (mountain coaster, ziplines), combined with the trend of growing summer visitation, is expected to result in busy summer day visitation of 1,700 visitors per day (up from 800 at existing and 1,010 under the No Action Alternative).

Under this alternative, there would be 2,790 vehicles seeking to access the resort on a winter CCC day, compared to 1,660 under the existing condition and no action alternative (when the CCC is 3,720). This includes the vehicles associated with non-skiing guests and employees. Under this alternative, for a summer busy day, there would be 960 vehicles accessing the resort, which is 420 additional vehicles beyond the existing and 340 beyond the forecast for the No Action Alternative. The 4 percent of additional guests would include those Nordic skiing, tubing, and fat biking in winter.

Traffic

The Proposed Action would result in additional visitation and, as a result, additional vehicle trips. All additional vehicle trips would pass through the counter located at GTR and a fraction would pass through counters at all other locations included in this analysis. The expected distribution of the additional roadways that access the resort and additional methodology is included in the **Traffic and Parking Technical Report**. **Table 3.5-6** and **Table 3.5-7** show the total forecast vehicle trips per day with additional vehicles resulting from implementation of the proposed projects under the Proposed Action Alternative for the winter and summer seasons, respectively.

Table 3.5-6. Forecasted Traffic Volumes – Proposed Action – Winter

Location (Proximity to the Resort)	2021-2023 Winter CCC Day Average Traffic Volume	No Action Alternative Forecast Winter CCC Day Traffic Volume	Additional Winter Vehicle Trips that Pass through the Location	Proposed Action Forecast Winter CCC Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	3,320	3,320	2,260	5,580	68%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,839	5,780	1,320	7,100	23%
3. SH 33 (2.4 miles south of Driggs traffic light)	8,596	11,900	620	12,520	5%
4. SH 33 (2.8 miles southeast of Victor)	5,012	7,160	420	7,580	6%
5. SH 33 (5.8 miles east of Newdale)	2,776	4,000	300	4,300	8%
6. SH 31 (3.5 miles north of Swan Valley)	1,885	3,000	40	3,040	1%
7. WY-22 (west of WY-390)	7,651	10,700	440	11,140	4%

Source: WYDOT, ITD, GTR, SE Group

The potential increase in busy day visitation (assumed to be the same as the additional lift capacity provided by the proposed projects for the purpose of this analysis) results in a 1 to 68 percent increase in traffic volume on the roads accessing the resort. The percent increase is highest at the resort entrance and on Ski Hill Road in Driggs and at or below 8 percent for all other roadways, with the lowest percent increase on SH 31 at Swan Valley.

Table 3.5-7. Forecasted Traffic Volumes – Proposed Action – Summer

Location (Proximity to the Resort)	2020-2022 Summer Saturday Average Traffic Volume	No Action Alternative Forecast Summer Traffic Volume	Additional Summer Vehicle Trips that Pass through the Location	Proposed Action Forecast 2033 Summer Busy Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	1,080	1,240	680	1,920	54%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,452	5,520	400	5,920	7%
3. SH 33 (2.4 miles south of Driggs traffic light)	12,005	17,480	200	17,680	1%
4. SH 33 (2.8 miles southeast of Victor)	8,902	12,620	140	12,760	1%
5. SH 33 (5.8 miles east of Newdale)	3,929	6,360	100	6,460	2%
6. SH 31 (3.5 miles north of Swan Valley)	4,060	5,600	20	5,620	0.4%
7. WY-22 (west of WY-390)	13,986	15,720	140	15,860	1%

Source: WYDOT, ITD, GTR, SE Group

The potential increase in summer busy day visitation results in a 0.4 to 54 percent increase in traffic volume on the roads accessing the resort. The percent increase is high at the resort entrance, 7 percent for Ski Hill Road in Driggs, and at or below 2 percent for all other counters. All forecast traffic volumes except for those at the counter at the resort entrance are higher than those forecast for winter CCC days under this alternative. **Table 3.5-8** summarizes the LOS at key locations under the Proposed Action.

Table 3.5-8. 2032/33 LOS at Key Locations – Proposed Action

Location (by Proximity to Resort)	Winter CCC Day		Summer Busy Day	
	Alt 2 LOS	No Action LOS	Alt 2 LOS	No Action LOS
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	D/E	D	C	B
2. Ski Hill Road (just east of the fork with Cemetery Road)	D/E	D	D/E	D
3. SH 33 (2.4 miles south of Driggs traffic light)	D	D	E	E

Location (by Proximity to Resort)	Winter CCC Day		Summer Busy Day	
	Alt 2 LOS	No Action LOS	Alt 2 LOS	No Action LOS
4. SH 33 (2.8 miles southeast of Victor)	D	D	E	E
5. SH 33 (5.8 miles east of Newdale)	B	B	B/C	B/C
6. SH 31 (3.5 miles north of Swan Valley)	B	B	C/D	C/D
7. WY-22 (west of WY-390)	D/E	D/E	F	F

Source: SE Group, Transportation Research Board

This analysis of traffic volumes illustrates that the proposed projects may increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days. No change in LOS is anticipated for roadways other than Ski Hill Road associated with the implementation of the Proposed Action. As illustrated in **Section 3.5.2**, there are existing challenges related to traffic associated with GTR and in the study area; GTR would need to continue to employ a variety of strategies to manage transportation demand.

Transit

Transit ridership is assumed to remain at the same percentage of day guests and employees as described in **Section 3.5.2**; because the total number of guests and employees would increase under the Proposed Action, additional buses may be required to accommodate the anticipated increase in transit ridership. The 2019 City of Driggs Transportation Plan did not identify existing capacity or infrastructure issues with the Teton Valley Bus Service to GTR, and did not identify improvements specific to the service; therefore, it is not anticipated that these additional riders would result in measurable changes to the service. Refer to **Section 3.5.4** for a cumulative discussion of potential future transit and ridership patterns in relation to the proposed projects.

Parking

With the additional lift capacity provided by the proposed projects, and the assumed commensurate increase in visitation, an additional 957 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,382 vehicles on a day when visitation is at the CCC (6,170 guests).

With 1,455 spaces that would be available under proposed conditions and assuming no expansions or improvements in base area parking capacity, there would be a deficit of 927 spaces when visitation is at a CCC (6,170 guests). Because GTR's anticipated base area is on private land, development was previously approved by Teton County, Wyoming in 2019, and no part of its implementation is dependent upon the decision to be made under this EIS process. The approved development included improvements to be made on the private land of the base area to increase parking capacity and use of other methods such as incentives for carpooling to balance parking capacity with resort CCC. The two actions of base area development and on-mountain improvements would result in a well-planned and balanced recreation

facility at GTR where base area infrastructure has been developed commensurate with on-mountain capacities – and vice versa. Refer to **Section 3.5.4** for a discussion of this “reasonably foreseeable future action” within the cumulative effects analysis.

In the summer, it is anticipated that an additional 333 vehicles would seek to park at one time at the resort on a busy day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 883 vehicles on a day when visitation is at 1,700 guests and a surplus of parking spaces (572) under the existing supply of parking.

Construction Trips

There would be a measurable increase in traffic volumes on GTR’s mountain road network and roadways that access GTR during the snow free months associated with construction vehicles needed to implement projects included in the alternative. The construction of chairlifts, ski trails, summer trails, and other elements of this alternative would necessitate truck trips both for tree removal as well as for bringing materials and infrastructure to the mountain. Tree removal methods, including in gladed areas, would primarily be accomplished over-the-snow and utilizing the on-mountain road network. Both traditional timber removal and over the snow removal would necessitate truck trips to remove the timber. Helicopter removal, burning, or over the snow removal is planned for all areas where glading is planned. To estimate construction traffic patterns across seasons, this analysis determined construction periods based on the anticipated build-out of project components included for each action alternative. Construction vehicle traffic represents a temporary increase in traffic that would occur during a set construction period, which is assumed for this alternative to be each summer up to 2033. Construction trips would be routed around the downtown core of the City of Driggs proper as best as possible to avoid city traffic.

Under this alternative, 2,933 truck trips are anticipated for tree removal from GTR. An additional 10,000 truck trips are anticipated for construction and staging of projects (non-tree removal). The construction of proposed infrastructure included in the alternative is planned to take place over the 10-year summer construction period. This likely results in 10-20 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present and resulting in minor impacts to the roadways. Refer to the **Traffic and Parking Technical Report** for more information on construction trips.

ALTERNATIVE 3 – NO SUP EXPANSION

It is anticipated that the implementation of Alternative 3 would result in an increase in lift capacity to 4,910 guests per day at GTR. As described under the Proposed Action, these additional visitors would generate an increase in vehicle trips and parking demand and would impact the number and proportion of day and overnight visitors. It is assumed under Alternative 3 that 65 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing.

For summer, it is anticipated that Alternative 3 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of The Proposed Action was assumed. Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative, there would be 2,210 vehicles seeking to access the resort on a winter CCC day, compared to 1,660 in the existing condition and No Action Alternative (550 additional). This figure includes additional non-skiing guests and employees.

Traffic

Alternative 3 would result in additional visitation and, as a result, additional vehicle trips. All additional vehicle trips would pass through the counter located at GTR and a fraction would pass through counters at all other locations included in this analysis. The expected distribution of the additional roadways that access the resort and additional methodology is included in the **Traffic and Parking Technical Report**.

Table 3.5-9 shows the total forecast vehicle trips per day with additional vehicles resulting from implementation of the proposed projects under Alternative 3 for the winter season.

Table 3.5-9. Forecasted Traffic Volumes – Alternative 3 – Winter

Location (Proximity to the Resort)	2021-2023 Winter CCC Day Average Traffic Volume	No Action Alternative Forecast Winter CCC Day Traffic Volume	Additional Vehicle Trips that Pass through the Location	Alternative 3 Forecast CCC Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	3,320	3,320	1,100	4,420	33%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,839	5,780	640	6,420	11%
3. SH 33 (2.4 miles south of Driggs traffic light)	8,596	11,900	300	12,200	3%
4. SH 33 (2.8 miles southeast of Victor)	5,012	7,160	260	7,420	4%
5. SH 33 (5.8 miles east of Newdale)	2,776	4,000	180	4,180	4%
6. SH 31 (3.5 miles north of Swan Valley)	1,885	3,000	20	3,020	1%
7. WY-22 (west of WY-390)	7,651	10,700	200	10,900	2%

Source: WYDOT, ITD, GTR, SE Group

The potential increase in busy day visitation (assumed to be the same as the additional lift capacity provided by the proposed projects for the purpose of this analysis) results in a 1 to 33 percent increase in traffic volume on the roads accessing the resort. The percent increase is highest at the resort entrance and on Ski Hill Road in Driggs and at or below 4 percent for all other roadways, with the lowest increase on SH 31.

Projected summer traffic conditions are the same as under the Proposed Action. **Table 3.5-10** summarizes the LOS at key locations under Alternative 3.

Table 3.5-10. 2032/33 LOS at Key Locations – Alternative 3

Location (by Proximity to Resort)	Winter CCC Day	
	Alt 3 LOS	No Action LOS
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	D/E	D
2. Ski Hill Road (just east of the fork with Cemetery Road)	D/E	D
3. SH 33 (2.4 miles south of Driggs traffic light)	D	D
4. SH 33 (2.8 miles southeast of Victor)	D	D
5. SH 33 (5.8 miles east of Newdale)	B	B
6. SH 31 (3.5 miles north of Swan Valley)	B	B
7. WY-22 (west of WY-390)	D/E	D/E

Source: SE Group, Transportation Research Board

Similar to the discussion for the Proposed Action, this analysis of traffic volumes illustrates that the proposed projects under Alternative 3 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days.

Transit

Transit ridership is assumed to remain at the same percentage of day guests and employees as described in **Section 3.5.2**; because the total number of guests and employees would increase under Alternative 3, additional buses may be required to accommodate the anticipated increase in transit ridership. Impacts to transit under Alternative 3 would be to a lesser degree than under the Proposed Action; therefore, it is not anticipated that additional riders would result in measurable changes to the service. Refer to **Section 3.5.4** for a cumulative discussion of potential future transit and ridership patterns in relation to the proposed projects.

Parking

With the additional lift capacity provided by the proposed projects, and the assumed commensurate increase in visitation, an additional 452 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 1,877 vehicles on a day when visitation is at the CCC (4,910 guests).

With 1,455 spaces that would be available under proposed conditions, there would be a deficit of 422 spaces when visitation is at the CCC (4,910 guests). Refer to **Section 3.5.4** for a discussion of the cumulative impacts of this deficit.

Projected summer parking conditions are the same as under the Proposed Action.

Construction Trips

There would be a measurable increase in traffic volumes on GTR's mountain road network and roadways that access GTR during the summer months associated with construction vehicles needed to implement projects included in the alternative. Refer to **Section 2.3** and the **Traffic and Parking Technical Report** for specific construction details in relation to parking and traffic. To estimate construction traffic patterns across seasons, this analysis determined construction periods based on the anticipated build-out of project components included for each action alternative. Construction vehicle traffic represents a temporary increase in traffic that would occur during a set construction period, which is assumed for this alternative to be each summer up for a 5-to-7-year period. Construction trips would be routed around the City of Driggs proper as best as possible to avoid city traffic.

Under Alternative 3, 1,718 truck trips are anticipated for tree removal from GTR. An additional 5,000 truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 6,718 truck trips. The construction of the proposed infrastructure included in the alternative is planned to take place over 5-7 years. This likely results in 10-15 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

It is anticipated that the implementation of Alternative 4 would result in an increase in lift capacity to 5,480 guests per day at GTR. As described under the Proposed Action, these additional visitors would generate an increase in vehicle trips and parking demand and would impact the number and proportion of day and overnight visitors. It is assumed under Alternative 4 that 69 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing.

For summer, it is anticipated that Alternative 4 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of the Proposed Action was assumed. Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative, there would be 2,480 vehicles seeking to access the resort on a winter CCC day, compared to 1,660 in the existing condition and No Action Alternative (an increase of 820). This figure includes additional non-skiing guests and employees.

Traffic

Alternative 4 would result in additional visitation and, as a result, additional vehicle trips. All additional vehicle trips would pass through the counter located at GTR and a fraction would pass through counters at all other locations included in this analysis. The expected distribution of the additional roadways that access the resort and additional methodology is included in the **Traffic and Parking Technical Report**. **Table 3.5-11** shows the total forecast vehicle trips per day with additional vehicles resulting from implementation of the proposed projects under Alternative 4 for the winter season.

Table 3.5-11. Forecasted Traffic Volumes – Alternative 4 – Winter

Location (Proximity to the Resort)	2021-2023 Winter CCC Day Average Traffic Volume	No Action Alternative Forecast Winter CCC Day Traffic Volume	Additional Vehicle Trips that Pass through the Location	Alternative 4 Forecast CCC Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	3,320	3,320	1,640	4,960	49%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,839	5,780	940	6,720	16%
3. SH 33 (2.4 miles south of Driggs traffic light)	8,596	11,900	440	12,340	4%
4. SH 33 (2.8 miles southeast of Victor)	5,012	7,160	300	7,460	4%
5. SH 33 (5.8 miles east of Newdale)	2,776	4,000	220	4,220	5%
6. SH 31 (3.5 miles north of Swan Valley)	1,885	3,000	40	3,040	1%
7. WY-22 (west of WY-390)	7,651	10,700	320	11,020	3%

Source: WYDOT, ITD, GTR, SE Group

The potential increase in busy day visitation (assumed to be the same as the additional lift capacity provided by the proposed projects for the purpose of this analysis) results in a 1 to 49 percent increase in traffic volume on the roads accessing the resort. The percent increase is highest at the resort entrance and on Ski Hill Road in Driggs and at or below 5 percent for all other roadways, with the lowest increase on SH 31.

Projected summer traffic conditions are the same as under the Proposed Action. **Table 3.5-12** summarizes the LOS at key locations under Alternative 4.

Table 3.5-12. 2032/33 LOS at Key Locations – Alternative 4

Location (by Proximity to Resort)	Winter CCC Day	
	Alt 4 LOS	No Action LOS
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	D/E	D
2. Ski Hill Road (just east of the fork with Cemetery Road)	D/E	D
3. SH 33 (2.4 miles south of Driggs traffic light)	D	D

Location (by Proximity to Resort)	Winter CCC Day	
	Alt 4 LOS	No Action LOS
4. SH 33 (2.8 miles southeast of Victor)	D	D
5. SH 33 (5.8 miles east of Newdale)	B	B
6. SH 31 (3.5 miles north of Swan Valley)	B	B
7. WY-22 (west of WY-390)	D/E	D/E

Source: SE Group, Transportation Research Board

Similar to the discussion for the Proposed Action, this analysis of traffic volumes illustrates that the proposed projects under Alternative 4 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days.

Transit

Transit ridership is assumed to remain at the same percentage of day guests and employees as described in **Section 3.5.2**; because the total number of guests and employees would increase under Alternative 4, additional buses may be required to accommodate the anticipated increase in transit ridership. Impacts to transit under Alternative 4 would be to a lesser degree than under the Proposed Action; therefore, it is not anticipated that additional riders would result in measurable changes to the service. Refer to **Section 3.5.4** for a cumulative discussion of potential future transit and ridership patterns in relation to the proposed projects.

Parking

With the additional lift capacity provided by the proposed projects, and the assumed commensurate increase in visitation, an additional 684 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,109 vehicles on a day when visitation is at the CCC (5,480 guests).

With 1,455 spaces that would be available under proposed conditions, there would be a deficit of 654 spaces when visitation is at the CCC (5,480 guests). Refer to **Section 3.5.4** for a discussion of the cumulative impacts of this deficit.

Projected summer parking conditions are the same as under the Proposed Action.

Construction Trips

There would be a measurable increase in traffic volumes on GTR's mountain road network and roadways that access GTR during the summer months associated with construction vehicles needed to implement projects included in the alternative. Refer to **Section 2.3** of this chapter and the **Traffic and Parking Technical Report** for specific construction details in relation to parking and traffic. To estimate construction traffic patterns across seasons, this analysis determined construction periods based on the anticipated build-out of project components included for each action alternative. Construction vehicle

traffic represents a temporary increase in traffic that would occur during a set construction period, which is assumed for this alternative to be each summer up for a 6-to-8-year period. Construction trips would be routed around the City of Driggs proper as best as possible to avoid city traffic.

Under Alternative 4, 1,953 truck trips are anticipated for tree removal from GTR. An additional 8,000 truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 9,953 truck trips. The construction of proposed infrastructure included in the alternative is planned to take place over 6-8 years. This likely results in 10-20 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

It is anticipated that the implementation of Alternative 5 would result in an increase in lift capacity to 5,600 guests per day at GTR. As described under the Proposed Action, these additional visitors would generate an increase in vehicle trips and parking demand and would impact the number and proportion of day and overnight visitors. It is assumed under Alternative 5 that 68 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing.

For summer, it is anticipated that Alternative 5 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of the Proposed Action was assumed. Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative, there would be 2,540 vehicles seeking to access the resort on a winter CCC day, compared to 1,660 in the existing condition and No Action Alternative (increase of 880). This includes additional non-skiing guests and employees.

Traffic

Alternative 5 would result in additional visitation and, as a result, additional vehicle trips. All additional vehicle trips would pass through the counter located at GTR and a fraction would pass through counters at all other locations included in this analysis. The expected distribution of the additional roadways that access the resort and additional methodology is included in the **Traffic and Parking Technical Report**. **Table 3.5-13** shows the total forecast vehicle trips per day with additional vehicles resulting from implementation of the proposed projects under Alternative 5 for the winter season.

Table 3.5-13. Forecasted Traffic Volumes – Alternative 5 – Winter

Location (Proximity to the Resort)	2021-2023 Winter CCC Day Average Traffic Volume	No Action Alternative Forecast Winter CCC Day Traffic Volume	Additional Vehicle Trips that Pass through the Location	Alternative 5 Forecast CCC Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	3,320	3,320	1,760	5,080	53%
2. Ski Hill Road (just east of the fork with Cemetery Road)	4,839	5,780	1,020	6,800	18%

Location (Proximity to the Resort)	2021-2023 Winter CCC Day Average Traffic Volume	No Action Alternative Forecast Winter CCC Day Traffic Volume	Additional Vehicle Trips that Pass through the Location	Alternative 5 Forecast CCC Day Traffic Volume	Percentage Increase from No Action Alternative Traffic Volume
3. SH 33 (2.4 miles south of Driggs traffic light)	8,596	11,900	480	12,380	4%
4. SH 33 (2.8 miles southeast of Victor)	5,012	7,160	320	7,480	4%
5. SH 33 (5.8 miles east of Newdale)	2,776	4,000	260	4,260	6%
6. SH 31 (3.5 miles north of Swan Valley)	1,885	3,000	40	3,040	1%
7. WY-22 (west of WY-390)	7,651	10,700	320	11,020	3%

Source: WYDOT, ITD, GTR, SE Group

The potential increase in busy day visitation (assumed to be the same as the additional lift capacity provided by the proposed projects for the purpose of this analysis) results in a 1 to 53 percent increase in traffic volume on the roads accessing the resort. The percent increase is highest at the resort entrance and on Ski Hill Road in Driggs and at or below 6 percent for all other roadways, with the lowest relative increase on SH 31 at Swan Valley.

Projected summer traffic conditions are the same as under the Proposed Action. **Table 3.5-14** summarizes the LOS at key locations under Alternative 5.

Table 3.5-14. 2032/33 LOS at Key Locations – Alternative 5

Location (by Proximity to Resort)	Winter CCC Day	
	Alt 5 LOS	No Action LOS
1. GTR Resort (Ski Hill Road, prior to Parking Lot Entrance)	D/E	D
2. Ski Hill Road (just east of the fork with Cemetery Road)	D/E	D
3. SH 33 (2.4 miles south of Driggs traffic light)	D	D
4. SH 33 (2.8 miles southeast of Victor)	D	D
5. SH 33 (5.8 miles east of Newdale)	B	B
6. SH 31 (3.5 miles north of Swan Valley)	B	B
7. WY-22 (west of WY-390)	D/E	D/E

Location (by Proximity to Resort)	Winter CCC Day	
	Alt 5 LOS	No Action LOS

Source: SE Group, Transportation Research Board

Similar to the discussion for the Proposed Action, this analysis of traffic volumes illustrates that the proposed projects under Alternative 5 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days.

Transit

Transit ridership is assumed to remain at the same percentage of day guests and employees as described in **Section 3.5.2**; because the total number of guests and employees would increase under Alternative 5, additional buses may be required to accommodate the anticipated increase in transit ridership. Impacts to transit under Alternative 5 would be to a lesser degree than under the Proposed Action; therefore, it is not anticipated that additional riders would result in measurable changes to the service. Refer to **Section 3.5.4** for a cumulative discussion of potential future transit and ridership patterns in relation to the proposed projects.

Parking

With the additional lift capacity provided by the proposed projects, and the assumed commensurate increase in visitation, an additional 744 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,169 vehicles on a day when visitation is at the CCC (5,600 guests).

With 1,455 spaces that would be available under proposed conditions, there would be a deficit of 714 spaces when visitation is at the CCC (5,480 guests). Refer to **Section 3.5.4** for a discussion of the cumulative impacts of this deficit.

Projected summer parking conditions are the same as under the Proposed Action.

Construction Trips

There would be a measurable increase in traffic volumes on GTR's mountain road network and roadways that access GTR during the summer months associated with construction vehicles needed to implement projects included in the alternative. Refer to **Section 2.3** of this chapter and the **Traffic and Parking Technical Report** for specific construction details in relation to parking and traffic. To estimate construction traffic patterns across seasons, this analysis determined construction periods based on the anticipated build-out of project components included for each action alternative. Construction vehicle traffic represents a temporary increase in traffic that would occur during a set construction period, which is assumed for this alternative to be each summer up for a 6-to-8-year period. Construction trips would be routed around the City of Driggs proper as best as possible to avoid city traffic.

Under Alternative 5, 2,699 truck trips are anticipated for tree removal from GTR. An additional 8,000 truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 10,699 truck trips. The construction of proposed infrastructure included in the alternative is planned to take place over 6-8 years. This likely results in 10-20 timber and other construction trips per day on average during

the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.

3.5.4 Cumulative Effects

TEMPORAL BOUNDS

The temporal bounds for this cumulative effects analysis for traffic and parking resources extend from GTR's founding as a resort in 1966 through the foreseeable future in which GTR can be expected to operate.

SPATIAL BOUNDS

The spatial bounds for this cumulative effects analysis for traffic and parking resources include the roadways leading to GTR and parking at the resort.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects analysis area, the reader is referred to **Appendix A**. Past ski resort and county development projects have been incorporated and analyzed in this document. Projects that could have cumulative impacts on traffic, parking, and access are analyzed below.

The implementation of the action alternatives would induce visitation increases at GTR that would have impacts related to traffic and parking. Other projects in the area would result in changes from the current conditions. These developments and effects within the Analysis Area are discussed below.

Grand Targhee Resort First Amended Master Plan – Planned Unit Development for Planned Resort

The *Grand Targhee Resort First Amended Master Plan – Planned Unit Development for Planned Resort* (PUD-PR), accepted by the Teton County, Wyoming in 2019, proposes 450 total accommodation units on private land, an increase from 97 units that currently exist. The plan requires that one parking space be constructed for each accommodation unit, 2 spaces for a single-family residence, and 1.5 spaces for a cabin or attached dwelling unit. The plan also establishes a Transportation Demand Management Program whereby the transit service would carry a minimum of 70 percent of total Employees At One Time (EAOT) at full build-out of the resort and a target of 30 percent of daily skiers (area residents or those staying off-resort) at full build-out. In summer, the transit service would be required to serve up to 40 employees per day and 20 percent of day guests (area residents and those staying off-resort), with 25 percent during events. GTR would also be required to promote carpooling and participate in locating, planning, and designing facilities to facilitate winter and summer day visitors carpooling and riding transit (i.e., expanded park and ride facilities). During the construction phase, Grand Targhee would be required to pay a road impact fee representing the proportional impacts of development during the construction phase beyond that which would ordinarily occur on Ski Hill Road (from Stateline Road to the resort entrance).

Should the accommodation units be developed, the additional required parking spaces and transit ridership may impact traffic and parking conditions leading to and at the resort. Resulting traffic volumes, level of service, and parking supply are analyzed for each alternative. In this analysis, 450 additional parking spaces was used as a conservative (low) estimate for new spaces resulting from new units,

although if more single-family homes or cabins are built, that figure may be higher. This would be the required addition beyond the current supply of parking. No assumptions were made based on GTR's required promotion of carpooling, however, if done effectively, this could result in an increase to AVO that decreases the number of vehicles seeking to access the resort. Transit ridership assumptions were made in line with the requirements (70 percent of EAOT and 30 percent of day guests).⁹⁷ The availability of more on-site lodging would also likely lead to more guests being able to stay on-resort and avoid driving up and back to the resort each day.⁹⁸ The associated reduction in vehicle trips was derived from the estimated number of guests that would be staying on-resort and riding transit, and that figure is listed below for each alternative.

Alternative 1 – No Action Alternative (Cumulative)

Under the No Action Alternative, traffic volumes are forecast to increase by the background traffic growth rate experienced from 2016 to 2022 and the continued trend of growing summer visitation. With the Colter Lift, the CCC of the mountain is 3,720 guests per day, assumed to be the level of busy day visitation. Summer visitation is expected to increase to 1,010 guests per busy day in summer 2033 (26 percent increase).

Traffic

With higher transit ridership and additional accommodations available at the resort, the number of vehicles accessing the resort on a winter CCC day is anticipated to be 1,230 vehicles per day, compared to 1,660 vehicles under the existing condition and alternative as analyzed under Direct and Indirect Environmental Consequences. In summer, 490 vehicles are anticipated to access the resort on a busy day, compared to 620 under the alternative as analyzed under Direct and Indirect Environmental Consequences and 540 under the existing condition.

Future traffic volumes, projected for 2032/33 based on the No Action Alternative and 450 on-resort lodging units and elevated transit ridership, were analyzed for this cumulative effects analysis. Under the No Action Alternative, if the buildout of the projects approved in the PUD-PR occurs, winter CCC day traffic volumes are projected to largely decline from background growth conditions and the No Action Alternative. Compared to the No Action Alternative under non-cumulative conditions, the decline is strongest at the resort entrance (-26 percent) and Ski Hill Road in Driggs (-9 percent) and relatively small at the other counters.

Similarly, summer busy day traffic volumes are projected to decline or remain constant from background growth conditions and the No Action Alternative. Compared to the No Action Alternative under non-cumulative conditions, the decline is strongest at the resort entrance (-21 percent) and relatively negligible at the other counters (0 to -2 percent change).

Lastly, LOS ratings for each counter were analyzed in comparison to non-cumulative conditions. Nearly all counters would not change in LOS for both winter and summer busy days except for at the entrance to

⁹⁷ It was assumed that a large portion of those riding transit would need to drive to the transit stop/parking and may pass these vehicle count locations. Only the number of vehicles on Ski Hill Road was reduced by assumed transit ridership.

⁹⁸ It was still assumed that some of these guests would head down Ski Hill Road on occasion within their stay for restaurants, groceries, and other goods/services.

GTR resort, which would slightly decrease in LOS (from D to C on winter CCC days and from B to A/B on summer busy days).

Transit

As described in the previous section, the PUD-PR would increase transit ridership in relation to GTR guests and employees, for a minimum of 70 percent of EAOT and 30 percent of daily skiers in the winter and 40 percent of employees and 20 percent of day guests in the summer. Improvements to the transit system and specifically to the Teton Valley Bus Service to GTR, such as additional buses, additional trips, and perhaps additional infrastructure at bus stops, may be necessary to accommodate these changes as specified in the previously approved PUD-PR.

Parking

Under the No Action Alternative and considering cumulative impacts, in winter on a day when visitation is at CCC (3,720), there would be 1,175 vehicles seeking to park at the resort at one time. This is a decrease from 1,425 as analyzed for this alternative under Direct and Indirect Environmental Consequences, as it considers a scenario where the lodging units are developed and related transit requirements are imposed.

Additional parking required with the build-out (conservatively estimated at 450 new parking spaces) is also included here. This contributes to a surplus of 730 spaces is anticipated during CCC days in the winter, compared to a 30-space surplus under Direct and Indirect Environmental Consequences.

Under the No Action Alternative, for summer days when visitation is approximately 1,010, it is anticipated that 450 vehicles would seek to park at GTR at one time, compared to 490 as analyzed for this alternative under Direct and Indirect Environmental Consequences. There remains a strong surplus of available parking during busy days in the summer under the No Action Alternative if the lodging/parking is built and transit requirements come into effect.

Alternative 2 – Proposed Action (Cumulative)

The Proposed Action alternative would result in an increase in lift capacity to 6,170 guests per day at GTR. As mentioned under Direct and Indirect Environmental Consequences, it is assumed that 70 percent of visitors would be overnight visitors to the region, up from 62 percent as estimated for existing. Many of these winter overnight visitors to the region would be staying on-resort, with an estimated 24 percent under the cumulative condition, compared to 6 percent if the additional units are not built (as analyzed under Direct and Indirect Environmental Consequences).

For summer, the additional capacity and draw presented by the new activities offered (mountain coaster, ziplines), combined with the trend of growing summer visitation, is expected to result in busy summer day visitation of 1,700 visitors per day (up from 800 at existing and 1,010 under the No Action Alternative).

Under this alternative in this cumulative condition, there would be 2,070 vehicles seeking to access the resort on a winter CCC day, compared to 2,790 vehicles as analyzed for this alternative under Direct and Indirect Environmental Consequences. Comparatively, 1,230 vehicles seek to access the resort under the No Action Alternative under this cumulative condition. For a summer busy day, there would be 740 vehicles accessing the resort, compared to 495 under the No Action Alternative under this cumulative condition and 960 under the Proposed Action as analyzed under Direct and Indirect Environmental Consequences. Transit ridership would increase to 70 percent of employees and 30 percent of day guests,

in accordance with the requirement. The additional buses required to accommodate the increase in transit ridership are incorporated.

Traffic

Additional vehicle trip calculations under the Proposed Action alternative reflect the trips both accessing and departing the resort, with the 2,070 winter CCC day vehicles resulting in 4,140 total vehicle trips and 740 summer busy day vehicles resulting in 1,480 vehicle trips. While all vehicles would pass through the counter located at the resort, a fraction pass each of the other counters, in line with the existing guest and employee origin breakdown.

In the winter, with additional on-resort lodging and increased transit ridership, vehicle counts at the resort entrance and Ski Hill Road in Driggs would decrease by 26 percent and 12 percent from the Proposed Action as analyzed under Direct and Indirect Environmental Consequences. Decreases at other counters range from 6 percent to 1 percent. The increase from the cumulative No Action Alternative is relatively in line with the increase analyzed under Direct and Indirect Environmental Consequences.

In the summer, with additional on-resort lodging and increased transit ridership, vehicle counts at the resort and Ski Hill Road would decrease by 23 percent and 4 percent from the Proposed Action as analyzed under Direct and Indirect Environmental Consequences. Decreases at other counters would be negligible. The increase from the cumulative No Action Alternative is relatively in line with the increase analyzed under Direct and Indirect Environmental Consequences.

Lastly, LOS ratings for each counter were analyzed in comparison to non-cumulative conditions. The forecast LOS ratings would only change for summer, with a grade improvement (from C to B) at the resort entrance and half a grade improvement (from D/E to D) at Ski Hill Road in Driggs.

Transit

As described previously, the PUD-PR would increase transit ridership in relation to GTR guests and employees, for a minimum of 70 percent of EAOT and 30 percent of daily skiers in the winter and 40 percent of employees and 20 percent of day guests in the summer. Improvements to the transit system and specifically to the Teton Valley Bus Service to GTR, such as additional buses, additional trips, and perhaps additional infrastructure at bus stops, may be necessary to accommodate these changes under the Proposed Action, to a greater degree than the No Action Alternative due to estimated increases in annual resort visitation and the higher numbers of employees and guests that would correspond to the percentages stated in the PUD-PR.

Parking

With the additional lift capacity provided by the proposed projects, the assumed commensurate increase in visitation, and increased transit ridership in accordance with the requirements of the GTR *First Amended Master Plan – Planned Unit Development for Planned Resort*, 1,883 vehicles would seek to park at-one-time at the resort when visitation is at the CCC (6,170 guests). This is an increase from 1,175 from the No Action Alternative as analyzed under cumulative and a decrease from 2,382 from the Proposed Action as analyzed under Direct and Indirect Environmental Consequences. An additional 450 parking spaces are included here associated with the requirements of the build-out of additional accommodation units.

With 1,905 spaces available under cumulative conditions, there would be a small surplus of spaces when visitation is at the CCC (6,170 guests), representing a well-balanced condition. This is a decrease from the

deficit of 927 spaces as analyzed for the Proposed Action under Direct and Indirect Environmental Consequences.

For summer days under this cumulative scenario when visitation is approximately 1,700 guests per day, 751 vehicles would seek to park at-one-time at the resort. This is an increase of 233 from the No Action Alternative as analyzed under cumulative and a decrease of 142 from the Proposed Action as analyzed under Direct and Indirect Environmental Consequences. An additional 450 parking spaces are included here associated with the requirements of the build-out of additional accommodation units.

With 1,975 spaces that would be available under cumulative conditions, there would be a surplus of 1,224 spaces when visitation is at 1,700 guests. This is an increase in the surplus as analyzed for the Proposed Action under Direct and Indirect Environmental Consequences (572-space surplus).

Alternative 3 – No SUP Expansion (Cumulative)

It is anticipated that Alternative 3 would result in an increase in lift capacity to 4,910 guests per day at GTR. As analyzed under Direct and Indirect Environmental Consequences, it is assumed that 65 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing. For this alternative, the number of guests staying on-resort increases to 29 percent of overnight visitors to the region, up from 7 percent under if the accommodations are not built.

For summer, it is anticipated that Alternative 3 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of the Proposed Action was assumed. Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative in this cumulative condition, there would be 1,640 vehicles seeking to access the resort on a winter CCC day, compared to 2,220 vehicles as analyzed for this alternative under Direct and Indirect Environmental Consequences. Comparatively, 1,230 vehicles seek to access the resort on a winter CCC day in the existing condition/No Action Alternative. Transit ridership would increase to 70 percent of employees and 30 percent of day guests, in accordance with the requirement. The additional buses required to accommodate the increase in transit ridership are incorporated.

Traffic

Additional vehicle trip calculations under Alternative 3 reflect the trips both accessing and departing the resort, with the 1,640 winter CCC day vehicles resulting in 3,280 total vehicle trips. While all vehicles would pass through the counter located at the resort, a fraction pass each of the other counters, in line with the existing guest and employee origin breakdown. Projected summer traffic conditions are the same as under the Proposed Action (see previous section).

With additional on-resort lodging and increased transit ridership, vehicle counts at the resort and Ski Hill Road in Driggs would decrease by 26 percent and 11 percent from Alternative 3 as analyzed under Direct and Indirect Environmental Consequences. Decreases at other counters range from 5 to 1 percent. The increase from the cumulative No Action Alternative is relatively in line with the increase analyzed under Direct and Indirect Environmental Consequences.

Lastly, LOS ratings for each counter were analyzed in comparison to non-cumulative conditions. The forecast LOS ratings would only change at the resort and Ski Hill Road in Driggs, with a half grade improvement from LOS D/E to LOS D at both locations.

Transit

As described previously, the PUD-PR would increase transit ridership in relation to GTR guests and employees, for a minimum of 70 percent of EAOT and 30 percent of daily skiers in the winter and 40 percent of employees and 20 percent of day guests in the summer. Improvements to the transit system and specifically to the Teton Valley Bus Service to GTR, such as additional buses, additional trips, and perhaps additional infrastructure at bus stops, may be necessary to accommodate these changes under Alternative 3, to a greater degree than the No Action Alternative due to estimated increases in annual resort visitation, but to a lesser degree than under the Proposed Action.

Parking

With the additional lift capacity provided by the proposed projects, the assumed commensurate increase in visitation, and increased transit ridership in accordance with the requirements of the *Grand Targhee Resort First Amended Master Plan – Planned Unit Development for Planned Resort*, 1,528 vehicles would seek to park at-one-time at the resort when visitation is at the CCC (4,910 guests). This is an increase from 1,175 from the No Action Alternative as analyzed under cumulative and a decrease from 1,877 from Alternative 3 as analyzed under Direct and Indirect Environmental Consequences. An additional 450 parking spaces are included here associated with the requirements of the build-out of additional accommodation units.

With 1,905 spaces available under cumulative conditions, there would be a surplus of 377 spaces, compared to a deficit of 422 spaces as analyzed under Direct and Indirect Environmental Consequences. This represents a strong surplus of parking.

Projected summer parking conditions are the same as under the Proposed Action under the cumulative section.

Alternative 4 – South Bowl, No Mono Trees (Cumulative)

It is anticipated that Alternative 4 would result in an increase in lift capacity to 5,480 guests per day at GTR. As analyzed under Direct and Indirect Environmental Consequences, it is assumed that 69 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing. For this alternative, the number of guests staying on-resort increases to 26 percent of overnight visitors to the region, up from 6 percent under if the accommodations are not built.

For summer, it is anticipated that Alternative 4 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of the Proposed Action was assumed. Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative in this cumulative condition, there would be 1,830 vehicles seeking to access the resort on a winter CCC day, compared to 2,480 vehicles as analyzed for this alternative under Direct and Indirect Environmental Consequences. Comparatively, 1,230 vehicles seek to access the resort on a winter CCC day in the existing condition/No Action Alternative. Transit ridership would increase to 70 percent of employees and 30 percent of day guests, in accordance with the requirement. The additional buses required to accommodate the increase in transit ridership are incorporated.

Traffic

Additional vehicle trip calculations under Alternative 4 reflect the trips both accessing and departing the resort, with the 1,830 winter CCC day vehicles resulting in 3,660 total vehicle trips. While all vehicles

would pass through the counter located at the resort, a fraction pass each of the other counters, in line with the existing guest and employee origin breakdown. Projected summer traffic conditions are the same as under the Proposed Action (see previous section).

With additional on-resort lodging and increased transit ridership, vehicle counts at the resort and Ski Hill Road in Driggs would decrease by 26 percent and 11 percent from Alternative 4 as analyzed under Direct and Indirect Environmental Consequences. Decreases at other counters range from 5 to 1 percent. The increase from the cumulative No Action Alternative is relatively in line with the increase analyzed under Direct and Indirect Environmental Consequences.

Lastly, LOS ratings for each counter were analyzed in comparison to non-cumulative conditions. The forecasted LOS ratings would only change at the resort, with a half grade improvement from LOS D/E to LOS D.

Transit

As described previously, the PUD-PR would increase transit ridership in relation to GTR guests and employees, for a minimum of 70 percent of EAOT and 30 percent of daily skiers in the winter and 40 percent of employees and 20 percent of day guests in the summer. Improvements to the transit system and specifically to the Teton Valley Bus Service to GTR, such as additional buses, additional trips, and perhaps additional infrastructure at bus stops, may be necessary to accommodate these changes under Alternative 4, to a greater degree than the No Action Alternative due to estimated increases in annual resort visitation, but to a lesser degree than under the Proposed Action.

Parking

With the additional lift capacity provided by the proposed projects, the assumed commensurate increase in visitation, and increased transit ridership in accordance with the requirements of the *Grand Targhee Resort First Amended Master Plan – Planned Unit Development for Planned Resort*, 1,680 vehicles would seek to park at-one-time at the resort when visitation is at the CCC (5,480 guests). This is an increase from 1,175 from the No Action Alternative as analyzed under cumulative and a decrease from 2,109 from Alternative 4 as analyzed under Direct and Indirect Environmental Consequences. An additional 450 parking spaces are included here associated with the requirements of the build-out of additional accommodation units.

With 1,905 spaces available under cumulative conditions, there would be a surplus of 225 spaces, compared to a deficit of 654 spaces as analyzed under Direct and Indirect Environmental Consequences.

Projected summer parking conditions are the same as under the Proposed Action under the cumulative section.

Alternative 5 – Mono Trees, No South Bowl (Cumulative)

It is anticipated that Alternative 5 would result in an increase in lift capacity to 5,600 guests per day at GTR. As analyzed under Direct and Indirect Environmental Consequences, it is assumed that 68 percent of visitors would be overnight visitors to the region, up from 62 percent estimated for existing. For this alternative, the number of guests staying on-resort increases to 26 percent of overnight visitors to the region, up from 6 percent under if the accommodations are not built.

For summer, it is anticipated that Alternative 5 would result in the same implemented projects as the Proposed Action, and increased visitation commensurate with that of the Proposed Action was assumed.

Therefore, the projected parking and traffic conditions in summer as a result of the alternative implementation would be the same as under the Proposed Action.

Under this alternative in this cumulative condition, there would be 1,870 vehicles seeking to access the resort on a winter CCC day, compared to 2,540 vehicles as analyzed for this alternative under Direct and Indirect Environmental Consequences. Comparatively, 1,230 vehicles seek to access the resort on a winter CCC day in the existing condition/No Action Alternative. Transit ridership would increase to 70 percent of employees and 30 percent of day guests, in accordance with the requirement. The additional buses required to accommodate the increase in transit ridership are incorporated.

Traffic

Additional vehicle trip calculations under Alternative 5 reflect the trips both accessing and departing the resort, with the 1,870 winter CCC day vehicles resulting in 3,740 total vehicle trips. While all vehicles would pass through the counter located at the resort, a fraction pass each of the other counters, in line with the existing guest and employee origin breakdown. Projected summer traffic conditions are the same as under the Proposed Action (see previous section).

With additional on-resort lodging and increased transit ridership, vehicle counts at the resort and Ski Hill Road in Driggs would decrease by 26 percent and 11 percent from Alternative 5 as analyzed under Direct and Indirect Environmental Consequences. Decreases at other counters range from 6 to 1 percent. The increase from the cumulative No Action Alternative is relatively in line with the increase analyzed under Direct and Indirect Environmental Consequences.

Lastly, LOS ratings for each counter were analyzed in comparison to non-cumulative conditions. The forecasted LOS ratings would only change at the resort, with a half grade improvement from LOS D/E to LOS D.

Transit

As described previously, the PUD-PR would increase transit ridership in relation to GTR guests and employees, for a minimum of 70 percent of EAOT and 30 percent of daily skiers in the winter and 40 percent of employees and 20 percent of day guests in the summer. Improvements to the transit system and specifically to the Teton Valley Bus Service to GTR, such as additional buses, additional trips, and perhaps additional infrastructure at bus stops, may be necessary to accommodate these changes under Alternative 5, to a greater degree than the No Action Alternative due to estimated increases in annual resort visitation, but to a lesser degree than under the Proposed Action.

Parking

With the additional lift capacity provided by the proposed projects, the assumed commensurate increase in visitation, and increased transit ridership in accordance with the requirements of the *Grand Targhee Resort First Amended Master Plan – Planned Unit Development for Planned Resort*, 1,730 vehicles would seek to park at-one-time at the resort when visitation is at the CCC (5,600 guests). This is an increase from 1,175 from the No Action Alternative as analyzed under cumulative and a decrease from 2,169 from Alternative 5 as analyzed under Direct and Indirect Environmental Consequences. An additional 450 parking spaces are included here associated with the requirements of the build-out of additional accommodation units.

With 1,905 spaces available under cumulative conditions, there would be a surplus of 175 spaces, compared to a deficit of 714 spaces as analyzed under Direct and Indirect Environmental Consequences. This represents a strong surplus of parking.

Projected summer parking conditions are the same as under the Proposed Action under the cumulative section.

ADDITIONAL PAST, PRESENT AND REASONABLY FORESEEABLE PROJECTS

The Grand Targhee MDP, accepted by the Forest Service in 2018, includes several projects (i.e., chairlift upgrades, terrain expansions, summer trail expansions, additional snowmaking) that may generate increases in visitation and result in increases to traffic and parking demand. Prior to the implementation of projects on the NFS lands a traffic and parking analysis would be conducted to determine impacts to traffic and parking conditions.

The City of Driggs Comprehensive Plan has designated several areas along or near Ski Hill Road in Driggs for low density residential, single family residential, and high density residential development. Corridor residential development would result in an increase to daily traffic volumes and turning movements onto and along Ski Hill Road. This increase in residential traffic may compound the ski area traffic and backups along Ski Hill Road through Driggs.

The City of Driggs has planned several transportation projects in its Transportation Plan and Capital Improvements Plan. The City has budgeted to expand the transit center parking lot. These 55 new spaces may support additional guests utilizing Teton Valley Bus Service.

The Jackson/Teton (Wyoming) Integrated Transportation Plan includes Transportation Demand Management strategies for Teton Pass. These strategies include encouraging use of transit, carpooling promotion, and regional ride matching towards reducing vehicles driving over Teton Pass.

3.5.5 Irreversible and Irretrievable Commitments of Resources

No irreversible and/or irretrievable commitments of resources in relation to traffic, parking, or ski area access have been identified in association with any of the alternatives analyzed in this document.

3.6 Cultural Resources

3.6.1 Scope of the Analysis

As required by the National Historic Preservation Act (NHPA), this cultural resource assessment aims to evaluate the potential impact of the federal undertaking on cultural resources. Special attention is paid to analyzing the potential effects on cultural resources that are listed in or eligible for listing in the National Register of Historic Places (NRHP). The term "cultural resources" may encompass various types of sites, areas, buildings, structures, districts, and objects that hold scientific, historic, and/or social values to one or more cultural groups, as defined by 36 CFR § 296.3. Other applicable laws include: The Native American Grave Protection and Repatriation Act (NAGPRA), (P.L. 101-601); The American Indian Religious Freedom Act of 1978 (P.L. 96-341); and The Religious Freedom Restoration Act of 1993 (P.L. 103-141).

NRHP eligibility is evaluated in terms of the integrity of the resource; its association with significant persons, events, or patterns in history or prior to European arrival (a period entitled prehistory or

precontact) its engineering, artistic, or architectural values; or its information potentially relative to important research questions in history or the precontact. Cultural resource work for the Proposed Action proceeded under a Programmatic Agreement (PA) entered into by various Forest Service units in Wyoming, the Wyoming State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (ACHP), as provided in 36 CFR § 800.14.⁹⁹ The PA provides for several process stipulations governing how the Forest Service will implement its compliance with Section 106 of the NHPA at a programmatic level. The intent of the PA is to streamline the SHPO consultation process and allow for timelier implementation and approvals and permitting activities for its programs and for activities of proponents and applicants operating on federal lands under Forest Service administration. This is particularly true for projects for which a finding of “no historic properties affected” is made by the Forest Service.

As part of the Grand Targhee Environmental Impact Statement, the Caribou-Targhee National Forest engaged in government-to-government consultation with potentially affected tribes. During the scoping comment period, the Forest Service sent a document to potentially affected tribes to inform them of the proposed project and to invite their input. The Forest Service recognizes the importance of tribal knowledge and cultural uses of the land and resources, and encouraged direct contact with the District Ranger to provide any information that could inform project development. The list of tribes consulted, and the details of government-to-government consultation are maintained internally by the Caribou-Targhee National Forest.

The following analysis relies on reporting from Metcalf Archaeological Consultants, Inc. a cultural resource contractor that completed the Class I and Class III cultural resource inventory and produced the *Grand Targhee Resort: Class III Cultural Resource Inventory for the 10-year Master Development Plan, Teton County, Wyoming* (Cultural Resources Technical Report).

3.6.2 Affected Environment

The project area is located within the western edge of the Teton Range between South Leigh Creek Canyon to the north and Teton Canyon to the south.¹⁰⁰ As it relates to cultural resources, the project area is a conifer-dominated forest intermixed with aspen; and possesses sand loams with mixed angular gravels (refer to **Section 3.5**, **Section 3.12**, and **Section 3.14** for more information and description of the project area). The slope areas have poor and unstable depositional environments that have poor potential of buried cultural materials. Ridges are heavily deflated and are very unlikely to have good potential for buried deposits except in isolated areas where microtopography may have allowed sediments to accumulate. Bench landforms have moderate potential for cultural materials. Stable alluvial floodplains are uncommon in the area and limited in extent along the primary drainages. However, where present, these have elevated potential for buried deposits, especially along the narrow corridor of the permanent flowing stream channel of Mill Creek.

⁹⁹ Programmatic Agreement amount the USDA Forest Service, Wyoming Forests, Wyoming State Historic Preservation Officer, and Advisory Council on Historic Preservation, Regarding Compliance with the National Historic Preservation Act on the National Forests and Grasslands of Wyoming. October 2008. Available for download here: <https://wyoshpo.wyo.gov/index.php/programs/review-and-consultation-s106>

¹⁰⁰ Fenneman 1946

CULTURAL HISTORY OF THE NATURAL ENVIRONMENT

For this cultural history, cultural contexts for the eastern Snake River Plain, which abuts the project area, provide a broad chronological overview, and are enhanced by observations made at archaeological sites nearer to and within the project area. These broad overviews include the 2004 Idaho National Engineering and Environmental Laboratory Cultural Resource Management Plan,¹⁰¹ as well as Franzen's Southeastern Idaho Cultural Resources Overview,¹⁰² Burley and Idaho Falls Districts, and Lohse's Southeastern Idaho Native American Prehistory and History.¹⁰³ These projects have identified a distinct presence of Native American activity in the alpine, with numerous site types ranging from lithic scatters and quarries to open camps and ice patches. While many of the sites are unevaluated and lacking diagnostics, they help dispel the popular public perception of these environments (tree line and above) as "wilderness, devoid of humans and their activities."¹⁰⁴ Other site types also provide evidence of historic era use ranging from Civilian Conservation Corps activity to lost items likely related to boy scouting activities.¹⁰⁵

Early Precontact Period (15,000 to 7,500 years before present [BP])

For the Snake River Plain, Wilson Butte Cave provides the earliest evidence of human occupation, with deposits dating to ca. 14,500 BP.¹⁰⁶ More proximate to the project area, Pitblado and Fowler¹⁰⁷ identified three sites with Clovis components in the western margin of the Teton Valley on a terrace of the Teton River. These sites suggest a deeply rooted lifeway based on seasonally focused hunting and gathering that likely continued up until EuroAmerican contact. Ice Age fauna, including mammoth, camel, horse, and bison would have been available in the sagebrush grasslands, and around playas with bighorn sheep present in the mountains. These species would have been hunted with fluted and stemmed projectile points that have been recovered from surface contexts, as well as from sites excavated near the Idaho National Engineering and Environmental Laboratory.¹⁰⁸

Middle Precontact Period (7,500 to 1,300 BP)

The Middle Precontact Period is marked by the appearance of smaller notched and stemmed projectile point forms that were used to hunt bison, pronghorn, mountain sheep, and deer. Ground stone also appears at this time, suggesting plant foods like camas were becoming increasingly important. Projectile point styles suggest that people from the Great Basin and the northwestern Plains occupied and/or influenced the eastern Snake River Plain at various times during the period.¹⁰⁹ Of particular relevance is the ongoing excavation occurring at the multicomponent Linn site between the present-day towns of Victor and Driggs, Idaho. The Linn site is a stratified, multicomponent campsite with a complex assemblage, including ground stone, drills, bifaces, and more.¹¹⁰ Projectile point styles identified at the

¹⁰¹ INEEL 2004

¹⁰² Franzen 1981

¹⁰³ Lohse 1993

¹⁰⁴ U.S. Congress 1964

¹⁰⁵ Peterson 2019a

¹⁰⁶ Gruhn 2006

¹⁰⁷ Pitblado and Fowler 2010

¹⁰⁸ Pitblado et al. 2011; INEEL 2004

¹⁰⁹ Franzen 1981; INEEL 2004; Lohse 1993

¹¹⁰ Sgouros and Stirn 2016

site span the Early Precontact Period through the Late Precontact period and include Cody Complex, McKean, Elko, and Rose Spring styles.

Late Precontact Period (1,300 to 150 BP)

The primary cultural change to occur during the advent of the Late Precontact Period was the adoption of bow and arrow technology and more diminutive projectile point styles; however, large lanceolate and corner-notched points continue to be present in small numbers. Projectile point styles consistent with the Great Basin Rosegate Series and the Northwestern Plains Avonlea types occur early in this period, followed by small side- and tri-notched projectile points. After about 700 BP, ceramics – most notably Shoshonean Intermountain Ware – appear with increasing frequency. Ground stone artifacts like mortars and pestles provide evidence for the use of camas and biscuitroot. The Wahmuza site, Baker Caves, and Aviator's Cave are important archaeological sites of this period.¹¹¹

The assemblages from excavated sites suggest that at least some of the population spent winter months at camps along the Snake River and likely relied on stored foods, including bison, deer, camas, and biscuitroot. The continuance of lifeways based on seasonally focused hunting and gathering likely resulted in people utilizing the alpine environments in the project area and beyond, including parkland caldera of Yellowstone National Park, for seasonally abundant resources and to engage in trading relationships with other tribal groups living in the Greater Yellowstone Area.¹¹²

Protohistoric Period (300 to 150 BP)

This period is characterized by the introduction of the domesticated horse and exposure to EuroAmerican trade goods, including the gun, for many aboriginal groups.¹¹³ Both resulted in considerable social, political, and economic change, including expanded range, increased warfare, and changes in leadership structure.

Historic Period – Native American

Numerous Native American groups, including the Nez Perce, Blackfeet, Sioux, and others, used the Snake River Plain for resources, transportation, and trade; however, the Shoshone and the Bannock (Northern Paiute) were two of the main groups that occupied the area. The Shoshone and Bannock tribes were highly nomadic and accessed a wide variety of seasonally available resources on the Snake River Plain and in adjacent uplands and mountains. During the winter months, people congregated in large winter villages along the Snake River in the Fort Hall area, dispersing into smaller groups in the spring. Important springtime resource areas included the Twin Falls area for salmon and the Fairfield/Dubois area for camas. In the late summer and early fall, the focus shifted mainly to hunting large game on the Great Plains and in Wyoming, although some people moved north into the Salmon River area for the late season salmon run. The introduction of the horse in the early 19th century allowed for greater mobility, increases in group size, and greater defense against outside groups.

The first documented encounter between Native American and EuroAmerican groups near the project area occurred in 1805 when the Lewis and Clark expedition met a group of Shoshone on the Continental Divide at Lemhi Pass (Idaho/Montana border). Following that, interaction between Native Americans and

¹¹¹ INEEL 2004; Lohse 1993

¹¹² MacDonald 2018; Lee and Metcalf 2011; Scheiber and Finley 2011

¹¹³ INEEL 2004

EuroAmericans was largely limited to trappers, traders, miners, and small groups of mostly Mormon settlers until the mid-1850s and 1860s when there was a marked increase in immigrant traffic and settlement of the region. This led to increased settler violence towards native groups and the establishment of military forts like Fort Hall, south of the project area on the Snake River. Increasing contact with EuroAmericans defined by direct colonial violence, policies of removal, and brutal massacres as well as the introduction of disease decimated aboriginal populations. This ultimately led to the establishment of the Fort Hall Indian Reservation under the terms of the Fort Bridger Treaty of 1868. The Fort Hall Indian Reservation is located near present-day Pocatello, Idaho, which now serves as a home for the federally recognized of the Shoshone-Bannock Tribes.¹¹⁴

Historic Period – EuroAmerican

The rich soils of southeast Idaho facilitated farming and ranching since the late 19th and early 20th centuries. EuroAmerican settlement began in the 1880s, with the arrival of predominantly Mormon families from northern Utah. These settlers engaged in agriculture in and around the bottomlands of the Snake River. In response to limited rainfall and seasonal fluctuations of the Snake River, farmers developed irrigation systems, transforming the landscape.

The arrival of the railroad in the area in 1900, revolutionized farming, linking farmers to larger markets.¹¹⁵ Consistent with national trends, however, the agricultural and economic depression in the 1920s and 1930s slowed area development and the population decreased. The creation of soil and water conservation districts in the late 1930s through the 1950s provided some help, allowing area farmers and ranchers to manage and maintain their agricultural lifeways.¹¹⁶

CULTURAL RESOURCE SURVEY – INVENTORY RESULTS

The cultural resource Class III inventory covered 1,586 acres, and resulted in the recordation of 11 cultural resources, including 10 sites (eight historic and two precontact) and one precontact isolated find within the area of potential effect (APE). Limited precontact cultural resources in the project area are likely due to its geography and ecology, which are unsuitable for significant or long-term residential or resource procurement sites. Alluvial cobbles (mostly quartzite and chert) were used for lithic testing and procurement, and the Mill Creek corridor may have served as a route of seasonal migration. Historic resources include a mid-20th century automobile road (the original and still operable entry road to GTR), a hiking trail, GTR original ski area buildings, and EuroAmerican historic arborglyphs. Two historic buildings and Ski Hill Road are recommended eligible for the National Register, while a precontact chipped stone scatter should be tested before construction of the proposed projects. All remaining cultural resources are not eligible for the National Register. See **Table 3.6-1** for a breakdown of a newly recorded isolate and other sites. The two precontact sites and the single isolated find are chipped stone artifact scatters, known as lithic scatters, consisting of chert and quartzite lithics. Three sites feature historic EuroAmerican arborglyphs in aspen stands, three are historic buildings associated with GTR's early development history (the Nature Center, Sioux, and Targhee Lodges), and a historic road (Ski Hill Road) and historic trail were also recorded.

¹¹⁴ INEEL 2004; Lohse 1993; Shoshone-Bannock Tribes 2016

¹¹⁵ Jorgenson 1979

¹¹⁶ Ibid

Table 3.6-1. Newly recorded sites and isolated find in the project area.

Site / Isolated find #	Period	Description/name	NRHP Recommendation
48TE2168	Historic	Arborglyph	Not Eligible
48TE2169	Historic	Arborglyph	Not Eligible
48TE2170	Historic	Arborglyph	Not Eligible
48TE2171	Precontact	Lithic Scatter	Unevaluated (further testing recommended)
48TE2172	Precontact	Lithic Scatter	Not Eligible
IF-CA-01 (isolated find)	Precontact	Lithic Scatter	Not Eligible
48TE2173	Historic	Building (Sioux Lodge)	Eligible
48TE2174	Historic	Building (Targhee Lodge)	Not Eligible
48TE2175.1	Historic	Forest Trail 025	Not Eligible
48TE2176	Historic	East Alta Ski Hill Road	Eligible
48TE2177	Historic	Historic Building (Nature Center)	Eligible

Cultural resources are nonrenewable, with few exceptions. Once the resource is disturbed, damaged, moved, altered, or removed, nothing can recover the information that could have been gained through analysis, or replace the opportunity for individuals to understand and experience the site. Forest Service management activities, public use, and natural processes have impacted cultural resources. Damage from vandalism (e.g., looting) continues to be a management issue. Current forest management practices are aimed at minimizing and/or avoiding negative impacts to cultural resources. This is accomplished primarily through compliance with Section 106 of the National Historic Preservation Act.

3.6.3 Direct and Indirect Environmental Consequences

This section describes the effects of the proposed projects and alternatives on historic properties and cultural resources. Management of culture and history is an important part of federal land management policy and practice. Preservation of these resource helps to give a sense of orientation to the people and groups whose ancestors left behind traces of their legacy in archaeological sites, historic properties, traditional cultural places, areas of importance, and sacred sites. Cultural resources tell the story of the changes in the environment and how humans benefited, impacted, or were otherwise affected by their use of the landscape and varying environmental conditions through time.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, activities at GTR would essentially be a continuation of existing conditions. No new development projects either within GTR's existing or proposed SUP expansion area

would occur. GTR would continue to operate under its current configuration and capacity. There would be no direct or indirect impacts to cultural resources and therefore no cumulative impacts from proposed development. The implementation of the No Action Alternative would not change or alter the characteristics of or the integrity of cultural resources within the project area.

EFFECTS COMMON ALL ACTION ALTERNATIVES (ALTERNATIVES 2-5)

Site 48TE2168

Site 48TE2168, a historic arborglyph inscription, is located within, an area of proposed terrain development under Alternatives 2 through 5 within the current SUP area of GTR. The proposed terrain development would involve some combination of glading and surface grading, which could impact this site. This site has been recommended *not eligible* for inclusion in the NRHP. Although the site retains integrity, archival research did not reveal that the site is associated with any significant events in the history of this area (Criterion A), nor did research into the name present on the tree reveal a person who was significant to the history of the area (Criterion B). This site does not have any distinctive design or construction characteristics (Criterion C), and it does not hold the potential to yield further information important to our understanding of the history of the area, either through more fieldwork or archival research (Criterion D).

The Sioux Lodge (Site 48TE2173)

The Sioux Lodge is located on private land within the existing operational boundary of the ski resort. Although snowmaking and terrain development are proposed in the area immediately north of the lodge under Alternatives 2 through 5, the lodge itself would not be impacted. The Sioux Lodge has been determined to be *eligible* for inclusion in the NRHP under Criterion C. Since it would not be altered by any of the action alternatives, there would be no effect to the Sioux Lodge.

The Targhee Lodge (Site 48TE2174)

The Targhee Lodge is separated from any proposed developments included in Alternatives 2 through 5 by about 80 feet, a space that is occupied by another structure. No changes to the Targhee Lodge are proposed. The Targhee Lodge does not retain sufficient integrity to meet the requirements of Criterion C, having lost character defining features and being impacted by the development of a modern building immediately abutting the north end of the lodge. The building is no longer readily identifiable as part of the original development of the resort. For these reasons the Targhee Lodge has been determined to be *not eligible* for inclusion in the NRHP. As none of the Proposed Action alternatives would include any modifications to the Targhee Lodge, it is expected that there would be no impact to this cultural resource.

Site 48TE2175.1

Site 48TE2175.1, Forest Trail 025, is a recorded trail segment high in the ski area just below the ridgeline of Fred's Mountain and below Mary's Nipple. Only the northwestern-most 100 feet would be impacted by proposed terrain development, glading, and grading in the existing SUP. The trail extends into the proposed (in Alternatives 2 and 4) South Bowl SUP expansion area but in locations of the South Bowl SUP expansion area that are not proposed to be disturbed. This site, Forest Trail 025, has been determined to be *not eligible* for inclusion in the NRHP as it fails to qualify under any of the criteria. Under the action alternatives, limited disturbance may occur to the northwestern 100 feet of this trail as a result of terrain development. This resource has been recommended ineligible for listing in the NRHP.

Site 48TE2176

Site 48TE2176, East Alta Ski Hill Road, has been determined to be *eligible* for inclusion in the NRHP under Criterion A for its direct association with GTR. The development of GTR has had a substantial impact on the Teton Valley providing recreation opportunities and economic stimulus. Today, the current alignment of the road is a paved, two-lane thoroughfare. The abandoned hairpin portion of the road remains a crown-and-ditch dirt road. The road is in excellent condition. Regular maintenance keeps it functional and allows it to continue to serve its original purpose of providing access to GTR. Since there would be no change to this eligible property, no effect is anticipated under any of the action alternatives to this site, the East Alta Ski Hill Road. The road is located partially within the current SUP boundary, and a short additional section of the road overlaps the proposed Mono Trees SUP expansion. The proposed projects do not include anything that would encroach upon or alter the existing road; therefore, no impacts would be anticipated to this resource under any of the alternatives.

The Nature Center (Site 48TE2177)

The Nature Center is adjacent to the active ski area and immediately adjacent to the proposed Summer Activity Zone and terrain development, glading, and grading areas under Alternatives 2 through 5. The building; however, is not proposed to be altered for those projects and would be avoided. The addition of a modern porch and windows to the southwest elevation and a porch to the northeast elevation impacts integrity of design and materials. Integrity of location, setting, workmanship, feeling, and association are retained. The Nature Center building is recommended as *eligible* under Criterion C given that it retains sufficient integrity and its character defining features. Original to the resort, which opened in 1969, this building boasts a distinctive design characteristic of the resort's early years reflected in the other buildings original to the resort (Sioux Lodge, 48TE2173; and Targhee Lodge, 48TE2174). The modern additions are readily distinguishable from the original building and could be easily removed. As the array of Proposed Actions under the full range of alternatives do not include any modifications to this building, it is anticipated that there would be no impact.

ALTERNATIVE 2 – PROPOSED ACTION

Under the Proposed Action, several additional sites may be impacted due to proposed development specifically in the Mono Trees SUP expansion area where multiple cultural resources recommended *not eligible* or *unevaluated* for NRHP occur. Further testing (or site avoidance) is recommended to determine NRHP recommendation for the *unevaluated site*.

Site 48TE2169

This site includes historic arborglyphs carved into the bark of aspen trees. Site 48TE2169, recommended *not eligible*, is located along a proposed new road/skiway access corridor in Mono Trees SUP expansion area, which may impact or remove some of the site's inscribed trees (EuroAmerican historic arborglyphs) under the Proposed Action.

Site 48TE2170

This site includes historic arborglyphs carved into the bark of aspen trees. Site 48TE2170, recommended *not eligible*, is located within the proposed Mono Trees SUP Expansion Area and within areas proposed for terrain development, consisting of a combination of glading and surface grading. The Proposed Action may impact or remove this site composed of historic EuroAmerican arborglyphs.

Site 48TE2171

Site 48TE2171, recommended as *unevaluated* for eligibility to the National Register, is along a proposed access road/skiway, within the Mono Trees SUP expansion area, which would serve new ski terrain proposed for development under the Proposed Action. Without flagging and avoidance, this potentially NRHP-eligible site would be impacted by future developments. Avoidance or a small-scale testing effort is recommended to assess eligibility of this site prior to any development.

Site 48TE2172

This newly recorded site is a precontact artifact scatter of unknown age featuring coarse-grained quartzite alluvial/glacial cobbles displaying flake scars, fracturing, or battering, indicating human use, with the majority exhibiting only one or two flake scars, implying the material was subjected to testing for lithic reduction. Site 48TE2172, recommended *not eligible*, is within the proposed Mono Trees SUP Expansion Area, but outside of areas proposed for specific developments. This site is avoided and would not be impacted by the proposed developments under the Proposed Action.

Isolated Find IF-CA-01

Isolated find IF-CA-01 consists of five pieces of debitage, two chert expedient tools and two quartzite cores, and is recommended *not eligible* for listing in the NRHP. This isolated find is located in the Mono Trees SUP expansion area along Mill Creek, but outside of the various development elements proposed under the Proposed Action. No impacts would be expected to this isolated find under the Proposed Action.

ALTERNATIVE 3 – NO SUP EXPANSION

Under Alternative 3 no SUP expansion would occur. Proposed projects would occur within GTR's existing SUP area. Sites located within the existing SUP include 48TE2168, the Sioux Lodge (48TE2173), the Targhee Lodge (48TE2174), 48TE2175.1, 48TE2176, and The Nature Center (48TE2177). No changes are proposed to the existing conditions of any of these sites within the existing SUP and therefore no impact would be expected under Alternative 3. Given that Alternative 3 does not propose expansion outside of the existing SUP, Alternative 3 would have no effect on cultural resources outside of the existing SUP. Impacts to cultural resources within the SUP would be consistent with those described under the discussion of *Effects Common to All Alternatives*.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

For project elements specific to Alternative 4, only site 48TE2175.1 (Forest Trail 025), is within the proposed South Bowl expansion area. While this alternative would impact the historic trail, it would avoid the impacts to resources in Mono Trees that would occur under Alternatives 2 and 5. This site was recommended not eligible for inclusion in the NRHP. The trail extends into the South Bowl SUP expansion area in locations slated for terrain development. Impacts to cultural resources within the SUP would be consistent with those described under the discussion of *Effects Common to All Alternatives*.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Under Alternative 5, the impacts to cultural resource sites located in the proposed expansion of the Mono Tree expansion area would be similar to those described in the Proposed Action. Impacts to any sites located in the South Bowl area would not occur under this alternative. Site 48TE2171 would still require avoidance or further testing and assessment to determine its potential eligibility for listing on the NRHP

before any ground-disturbing activities can occur. Moreover, the impacts to cultural resources associated with the Mono Tree expansion area, which were analyzed under the Proposed Action, would also occur under Alternative 5. For an impact analysis of each site that could be affected in the Mono Tree expansion area, please refer to the discussion provided under **Alternative 2 - Proposed Action**.

3.6.4 Cumulative Effects

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative.

TEMPORAL BOUNDS

The temporal bounds for this cumulative effects analysis for cultural resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

SPATIAL BOUNDS

The spatial bounds for this cumulative effects analysis for cultural resources are limited to public and private lands in the vicinity of GTR's operational area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A**. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment discussion.

Several projects, such as building mountain biking and hiking trails or expanding ski terrain, have the potential to collectively affect cultural resources. Nevertheless, any future projects listed in **Appendix A** that are not currently being analyzed would need to undergo cultural surveys to assess their eligibility for being listed under the NRHP.

Selection of a No Action Alternative would not add any cumulative impacts to cultural resources within the project area. All action alternatives, when combined with other past, present, and reasonably foreseeable future actions at GTR, could alter the cultural resources within the project area. However, since all action alternatives would avoid NRHP-eligible and unevaluated cultural resources, all action alternatives (as well as the no action alternative) would have no effect on historic properties in the APE, and no cumulative impacts to cultural resources are possible.

3.6.5 Irreversible And Irretrievable Commitments Of Resources

Since all action alternatives would avoid NRHP-eligible and unevaluated cultural resources, all action alternatives (as well as the no action alternative) were determined to have no irreversible and/or irretrievable commitments of cultural resources.

3.7 Public Safety

3.7.1 Scope of the Analysis

The scope of this analysis includes the extent of the existing and proposed GTR SUP area. In particular, this analysis would focus on the proposed South Bowl area. This section describes the existing conditions

at GTR as they relate to public safety, as well as the associated effects to public safety for each alternative. It is recognized that certain areas adjacent to the existing GTR SUP boundary are attractive destinations for backcountry skiing. This public safety analysis describes risks to backcountry skiers as well as skiers within the SUP boundary under each alternative.

3.7.2 Affected Environment

GTR serves as a premier destination for advanced skiers. Approximately 12 percent of GTR skiers are experts. Within the GTR SUP area, there are approximately 142 acres of expert trails. GTR also has several backcountry exit points along the SUP boundary that serve as entry points for out-of-bounds terrain. Designated exit points are located in areas that allow for appropriate access to backcountry terrain. Exit points are strategically located to mitigate potential risks where possible. Skiers must use designated exit points to enter backcountry terrain. Backcountry terrain areas are outside of the GTR SUP boundary and are unmonitored and uncontrolled environments. Skiers who enter this terrain do so at their own risk.

The South Bowl area is a popular destination for backcountry skiers. It is located outside of the GTR SUP boundary, adjacent to the inbounds terrain served by the Colter Lift. GTR has a closed boundary/open space backcountry access policy, where skiers are permitted to leave the SUP boundary only through designated areas. Backcountry skiing within South Bowl is primarily accessed by a backcountry exit point near the summit of Peaked Mountain referred to as the Noodle Ridge exit point (above the top terminal of the Colter Lift) and another further down the ridge referred to as El Dente exit point (below the top terminal of the Colter Lift).¹¹⁷ The Noodle Ridge exit point is strategically located above the top terminal of the Colter Lift and requires a hike (described in detail in the following paragraphs) to help mitigate the number of unprepared guests that may exit the controlled SUP area. Unprepared guests (e.g., not possessing adequate equipment, knowledge, or skills for backcountry travel) pose risks to themselves and the staff of GTR, who responds to incidents involving these users.

The backcountry terrain of South Bowl has received consistent use for many years. The accessibility of South Bowl is particularly attractive to many backcountry skiers as they can leave the SUP boundary, ski backcountry terrain, and return to in-bounds terrain with limited effort. Specifically, skiers accessing the backcountry via the Noodle Ridge and El Dente exit points can return to the ski area on the south side of the Colter terrain pod where there is an opening in the rope line. This results in the majority of the backcountry skiers recreating in this area coming back the ski area boundary rather than descending into the bottom of Teton Canyon. This characteristic, along with the scenery and quality of terrain, contribute to its heavy use.

To access South Bowl from the Noodle Ridge exit point, it is a minimum of 1 mile from the top of the Dreamcatcher Lift, there is no direct uphill access from the Colter Lift to the Noodle Ridge exit point. A wildlife camera study performed for this analysis in 2021 found that backcountry skier use was high, ranging from an estimated 5-10 skiers/month to 20+ skiers per month in the northern part of South Bowl. These are likely very conservative estimates due to accuracy limitations with game cameras.¹¹⁸

¹¹⁷ Communication with GTR and USFS, January 2023

¹¹⁸ Alder Environmental 2021

The El Dente exit point can be accessed from skiing downhill from the Colter Lift; however, it provides limited access to the South Bowl backcountry terrain. The backcountry terrain accessed by El Dente is a small shoulder of the South Bowl terrain.

Since the time of backcountry use monitoring, the Colter Lift has been constructed and is now open to the public. Primary access to the South Bowl area is unchanged from conditions prior to Colter Lift construction, with the exception of the El Dente exit point which did not exist prior to the lift construction. As previously mentioned, the El Dente exit point only accesses a limited area of the South Bowl backcountry terrain. Although use within this specific area has increased, it is confined to a limited spatial area. During the 2023 season (first season Colter Lift operations) a marginal increase in use patterns was observed within the South Bowl area.¹¹⁹

AVALANCHE TERRAIN

Four factors are important to consider when assessing avalanche risk: slope, snow cover, weak layers in the snow cover, and triggers.¹²⁰ Triggers could be human-induced or could be due to natural forces such as wind, rain, and warming temperatures.¹²¹ Slopes between 30 and 45 degrees and above are prone to avalanches, particularly if there are weak layers buried under snowpack.¹²² Weak layers are caused by many circumstances, including the slope's aspect. In the Northern hemisphere, south-facing slopes often have strong slabs created by melt-freeze crusts, where the snow surface repeatedly melts from sun exposure and refreezes overnight.¹²³ The strong slabs created by these conditions have a low chance of collapsing and causing a slab avalanche. North-facing slopes, however, receive less solar exposure and are more prone to slab avalanches due to weaker slab layers beneath the surface.¹²⁴ Similarly, east-facing slopes generally do not warm as much as west-facing slopes because their only solar exposure is during colder morning temperatures.¹²⁵ Due to these conditions, west-facing and south-facing slopes are generally less prone to avalanches.

The GTR SUP area exists primarily on a west-facing slope on the western edge of the Tetons. While the ski area includes steep terrain prone to avalanches, ski patrol management and monitoring efforts mitigate avalanche risk to skiers in the resort. However, these efforts are only conducted within the SUP boundary. As previously described, many backcountry skiers access unmanaged and unmaintained backcountry terrain from GTR. Refer to **Section 3.1** for more information on recreation patterns in and around the GTR SUP boundary.

The South Bowl is a portion of terrain in Teton Canyon characterized by steep slopes, open bowls, and rock bands. It has a south-facing aspect and the slope ranges from approximately 30 to over 60 degrees. The area is prone to avalanches due to its steep slope and snow cover.

¹¹⁹ Communication with USFS and GTR, January 2023

¹²⁰ Government of Canada 2018

¹²¹ REI 2021

¹²² Ibid.

¹²³ Snow Brains 2021

¹²⁴ Ibid.

¹²⁵ Avalanche.org 2022

The existing Mono Trees area that is currently outside of the SUP boundary has low avalanche risk and is not a popular backcountry skiing area.

SKI PATROL OPERATIONS

There are currently two First Aid/Ski Patrol facilities within the GTR SUP boundary that provide downhill access to all points of the developed trail network. There is also a First Aid facility in the base area. During the 2022 construction season a ski patrol facility was constructed adjacent to the top terminal of the Colter Lift. This facility allows patrollers to more easily access accidents within the Colter terrain pod and adjacent areas beyond the SUP boundary in the South Bowl area, which currently exists as backcountry adjacent the ski area.

Ski patrol techniques include hand charges, ski cutting, skier compaction, winch cat operations for snowcat compaction, and other commonly used techniques to mitigate avalanche risk within the SUP boundary. There are currently no avalaunchers used as part of GTRs avalanche mitigation protocol. The boundaries of the GTR ski patrol are currently limited to the GTR SUP area; however, they serve as a resource for occasional backcountry rescues when possible/necessary.

EMERGENCY SERVICES

Emergency services that are relevant within this Public Safety analysis include search and rescue, firefighting, and ambulance service. Teton County Search and Rescue (TCSAR) is located in Jackson, Wyoming, approximately 45 miles from GTR. As described in **Section 3.4**, TCSAR offers search and rescue and emergency response services in and around GTR, particularly in the backcountry. GTR ski patrol and TCSAR collaborate to ensure the safety of skiers at GTR. However, because TCSAR only has two members in Alta and doesn't fly at night or in snowstorms, response times can pose a challenge for emergency services at GTR. Additional search and rescue services are provided by Teton County Idaho Search and Rescue (TCISAR), which offers rescue and emergency response in Teton County, Idaho as well as in Teton County, Wyoming. TCISAR, TCSAR, and GTR ski patrol collaborate on trainings and response procedures to distribute resources as appropriate and ensure adequate emergency response in Teton County, Wyoming, and Idaho.¹²⁶

In addition to TCISAR, Teton County Idaho's Fire and Rescue is contracted to provide emergency services in and around Alta, Wyoming. The Teton County Fire and Rescue team primarily provides firefighting and ambulance services in this area and does not typically respond to backcountry related incidents.

More about emergency services in the project area is discussed in **Section 3.4**.

3.7.3 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, the South Bowl would not be included in the ski area boundary. Guests who decide to ski this terrain would do so at their own risk. The area would continue to exist as backcountry terrain as described in the Affected Environment.

¹²⁶ Personal communication with TCISAR

Avalanche Terrain

Access to unmanaged avalanche terrain adjacent to the GTR SUP boundary would not change under the No Action Alternative. It is anticipated that as participation in backcountry recreation continues to grow, additional guests of GTR would venture into South Bowl from the Noodle Ridge and El Dente exit points that currently exist on Peaked Mountain. Refer to **Section 3.1**, for a discussion of trends in backcountry recreation. At other resorts, increases in use of highly accessible adjacent backcountry terrain have resulted in increased avalanche accidents and injuries.¹²⁷

Ski Patrol Operations

In this alternative, ski patrol facilities and the extent of their operations would largely remain the same as described in Affected Environment. It is anticipated that participation in backcountry recreation would increase into the future consistent with current trends. Commensurate to this trend, the demand of GTR patrol to respond to incidents outside the SUP boundary is also anticipated to increase under this Alternative.

Emergency Services

In this alternative, it is likely that the anticipated increase in backcountry use in South Bowl would increase the strain on TCSAR and Teton County, Idaho Fire and Rescue. These services may need to respond to more backcountry incidents into South Bowl as participation in backcountry recreation increases commensurate with existing trends.

ALTERNATIVE 2 – PROPOSED ACTION

The Proposed Action alternative includes an expansion of the GTR SUP area to include the South Bowl and the Mono Trees areas. The total SUP expansion in this alternative is 866 acres. Both the Mono Trees and the South Bowl areas would be lift-served terrain within the ski area boundary under the Proposed Action.

Other proposed projects and activities within the existing SUP boundary may have inherent risks associated with them; however, they would exist in an area that is already managed for these types of uses and are not discussed in the context of this public safety analysis.

Avalanche Terrain

As previously discussed, the South Bowl area is prone to avalanches and is a consistently used backcountry skiing destination. Consistent use patterns have been observed by GTR ski patrol for many years. The proposed South Bowl boundary has been drawn in a way that takes on manageable risk and avoids the most dangerous and avalanche-prone areas. Including South Bowl in the GTR SUP boundary and extending ski patrol operations and avalanche mitigation practices into the area would substantially reduce avalanche risk to skiers in this area. This would allow more skiers to utilize the unique terrain in South Bowl without as great of a risk but would change the character of the area from unmanaged backcountry to a lift served skiing experience. Further, while a large portion (266 acres) of the South Bowl area would be included in the SUP boundary, adjacent backcountry areas that are currently being recreated in would remain in their existing, natural states and would still be available to skiers. The incorporation of South Bowl into the SUP boundary would increase the ease of access into this

¹²⁷ David Hamre and Associates 2021

backcountry terrain just adjacent to South Bowl, which could result in more skiers in unmanaged and uncontrolled terrain.

It is likely that with the addition of South Bowl, skiers that currently participate in backcountry expeditions in the South Bowl area would be displaced into other backcountry areas. Some skiers may continue to ski in Teton Canyon, where South Bowl is located, or South Leigh Canyon, on the north and eastern side of the GTR SUP boundary, as both are currently used as backcountry destinations (refer to **Section 3.1** for more information). However, as a result of the South Bowl projects, some skiers may travel farther from GTR and into the JSW in other uncontrolled and avalanche-prone terrain. As skiers move farther away from the GTR boundary, they are also moving farther from Search and Rescue resources, further increasing their risk in the event of an avalanche.

Ski Patrol Operations

In order to include South Bowl and Mono Trees within the SUP area boundary, necessary safety and management practices would be required. The boundaries of regular ski patrol operations would expand 866 acres to include the Mono Trees and South Bowl areas. Ski patrol and mountain operations staff would ensure the safety of skiers through existing measures described under Affected Environment as well as the use of additional measures in the South Bowl area. The Mono Trees area is not considered avalanche terrain and GTR does not anticipate safety or avalanche concerns in this area. However, regular ski patrol operations would occur in this area as it would become a part of the operational boundary under the Proposed Action alternative.

As described previously, the South Bowl area has avalanche terrain. The Proposed Action includes the construction of an additional ski patrol facility located at the top of the South Bowl Lift to serve the area. All existing ski patrol facilities including the recently constructed facility at the top of the Colter Lift would also remain in service. Additional safety practices in South Bowl include the use of avalaunchers to disrupt unstable snowpack, bootpacking applicable terrain, adding two rescue caches, providing adequate signage to inform users of avalanche hazards, and the use of machinery such as winch snow cats to pack and groom the snow. Two avalaunchers and a bomb cache that would store avalauncher rounds are proposed at the base of the South Bowl Lift (refer to **Figure 4**). Two rescue caches would be located within the South Bowl area to ensure risk mitigation and public safety in the area. One rescue cache would be located out of the existing and proposed SUP boundaries on the peak east of Mary's Nipple, and the other below the South Bowl area in Teton Canyon. The rescue cache in Teton Canyon is intended to house a snowmobile and have a rescue sled to help Teton County Search and Rescue teams and other first responders access victims.

Additional safety measures in South Bowl would mitigate the risk of avalanches in the SUP area. In surrounding areas, the installation of rescue caches would support the public safety of skiers within the SUP boundary and in potentially surrounding backcountry areas by providing storage for rescue equipment, thus improving the efficiency of emergency response. Further, additional ski patrol operations at GTR could assist local search and rescue in responding to emergencies in areas adjacent to the SUP.

Emergency Services

In the Proposed Action alternative, portions of the South Bowl area would no longer be backcountry terrain. The area within GTR's proposed SUP boundary would be managed primarily by GTR ski patrol and therefore would largely reduce the needs of emergency services in South Bowl as a whole, especially when compared with the No Action alternative. At the same time, as described previously within this

section, the incorporation of South Bowl into the GTR SUP boundary would provide easier access into the surrounding backcountry terrain in Teton Canyon. This could increase the number of skiers entering uncontrolled terrain, which could require additional search and rescue response. Further, because backcountry skiers who frequent the South Bowl area could be displaced into other backcountry terrain, it is possible that occasional emergency response would be required in areas farther from the resort under this alternative. The rescue caches proposed in the area are intended to provide support not only to GTR but to first responders such as Teton County Search and Rescue.

Further, the expansion of the ski area is predicted to increase the guest capacity, which would most likely increase the need for services and create additional strain on emergency services. Additional guests may also impact traffic patterns, creating more challenges with access to the resort for emergency response (refer to **Section 3.5** for more information).

Although there would be impacts on Search and Rescue resources as a result of increased visitation and backcountry skier displacement, the Proposed Action alternative could address concerns about the increase in backcountry use in the South Bowl by providing additional ski patrol facilities and public safety resources within this area and eliminating unmanaged backcountry use within the area most proximate to the developed terrain network of GTR. The presence of South Bowl as backcountry terrain adjacent to the developed lift network within GTR's SUP boundary could present long-term challenges as backcountry skiing continues to grow into the future. Inclusion of South Bowl into the SUP boundary could offer a more long-term management strategy, reduce the demand for emergency services within South Bowl, and provide additional support within areas that would continue to exist as backcountry within proximity of the proposed ski area boundary.

Conversely, the incorporation of South Bowl into the SUP boundary would increase the ease of access into backcountry terrain just adjacent to South Bowl and displace users into more remote extents of the surrounding backcountry. This could result in more skiers in unmanaged and uncontrolled terrain and could have a strain on emergency services. The extents of backcountry terrain beyond the proposed South Bowl SUP area generally require different skillsets to navigate and are less desirable for the majority of recreationists that would consider entering the portion of South Bowl that is proposed to be incorporated into GTR's SUP boundary from the existing SUP boundary.

By managing the area that is most proximate the ski area and preventing higher quantities of inexperienced backcountry travelers from getting lured into this currently unmanaged area, it is anticipated that the proposed South Bowl project would have a positive impact on emergency services. However, it is important to note that existing backcountry use in further extents of South Bowl and beyond would persist and could continue to generate demand for emergency services.

ALTERNATIVE 3 – NO SUP EXPANSION

Under the no SUP expansion alternative, there would be improvements within the SUP area; however, the GTR SUP boundary would not change.

Avalanche Terrain

The consequences in this alternative would be similar to that of the No Action alternative contained within this section. The South Bowl backcountry area would not be monitored or managed by ski patrol, as it would be out-of-bounds terrain. In an unmanaged state, as would exist under this alternative, the

South Bowl presents considerable avalanche hazards that could present impacts to public safety when considered with increasing participation in backcountry recreation.

Ski Patrol Operations

In this alternative, ski patrol techniques would remain the same as described under the No Action Alternative. All existing ski patrol facilities would remain in service. Under this alternative, it is anticipated that ski patrol operations would more frequently need to extend to adjacent backcountry terrain within the South Bowl area to support local emergency services as participation in backcountry recreation increases consistent with current trends.

Emergency Services

The impacts to emergency services would be similar to that described under the No Action alternative. However, due to the proposed projects in this alternative, there would be a larger increase in guest capacity which could strain emergency resources more than in the No Action alternative as there could be a greater number of guests that decide to use the existing Colter Lift to access adjacent backcountry terrain in the South Bowl area. No portion of South Bowl would be managed by GTR under this alternative. The recently constructed Colter Lift, coupled with increased visitation that would be generated by proposed projects within the existing SUP boundary, is anticipated to create additional challenges for emergency services.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Under the South Bowl, No Mono Trees alternative, the proposed SUP expansion would include the South Bowl area but not the Mono Trees area. The total SUP expansion in this alternative is 266 acres.

Avalanche Terrain

Similar to the Proposed Action alternative, under Alternative 4 the South Bowl area would have lift access for skiers at GTR. While the area has avalanche-prone terrain, necessary safety protocols would be conducted by GTR's ski patrol and mountain operations staff to control for avalanche risk. Backcountry skiers who currently frequent the area could be displaced into other areas around the GTR SUP boundary or further into the JSW. Refer to the Proposed Action discussion for more information on the impacts of including South Bowl terrain within the SUP boundary. The Mono Trees area would not be included in the SUP boundary.

Ski Patrol Operations

Ski patrol operations would be extended 266 acres into the South Bowl area and might be required farther from the resort due to backcountry skier displacement, as described in the Proposed Action alternative. Similar to the Proposed Action alternative, this alternative includes one additional ski patrol facility located at the top of the South Bowl Lift to provide timely response to skiers within the South Bowl terrain pod, along with adjacent backcountry terrain. All existing ski patrol facilities would also remain in service. Ski patrol techniques would include all existing techniques as well as the use of avalaunchers, bootpacking, and snowcats to ensure public safety in the South Bowl area.

Emergency Services

The need for emergency services response would be similar to that in the Proposed Action alternative as backcountry skiers would be displaced from the South Bowl area and GTR's guest capacity would

increase. Alternative 4 would also address increased usership that is anticipated in the South Bowl area as participation in backcountry recreation increases into the future. This alternative would allow GTR to have a managing presence in South Bowl, as is the case in the Proposed Action, and is anticipated to have beneficial effects to public safety and emergency services as a result.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Under the Mono Trees, No South Bowl alternative, the SUP area would be expanded to include Mono Trees but not South Bowl. The total SUP expansion in this alternative is 600 acres.

Avalanche Terrain

Mono Trees is not currently a backcountry skiing destination and has low avalanche risk. Skier access into avalanche terrain would be similar to that described in the No Action alternative.

Ski Patrol Operations

Ski patrol operations would be extended 600 acres into the Mono Trees area. All existing ski patrol facilities would remain in service under this alternative. There would not be an additional ski patrol facility at the top of the South Bowl Lift in this alternative. Without South Bowl included in the GTR SUP boundary, backcountry skiers would not be displaced. The demand for backcountry response would be similar to that of the No Action Alternative.

Emergency Services

Impacts to Emergency Services would be similar to that of the No Action Alternative. Under this alternative, increased visitation that would be generated by proposed projects within the existing SUP boundary and Mono Trees, are anticipated to create additional challenges for emergency services.

3.7.4 Cumulative Effects

SCOPE OF THE ANALYSIS

Temporal Bounds

The temporal bounds for this cumulative effects analysis for public safety extend from GTR's inception as a resort in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for public safety are limited to public lands and surrounding backcountry in the vicinity of the existing and proposed GTR SUP area.

PAST, PRESENT, AND FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the document. Past ski area development projects have been incorporated and analyzed in this document as part of the Affected Environment. Projects that could have cumulative impacts on public safety are analyzed below.

The development within and adjacent to the existing GTR SUP area has incrementally increased the number of visitors to GTR. An increased number of visitors in recent has impacted public safety by creating a higher demand for emergency services and ski patrol operations. Additionally, future projects

that have yet to be implemented and are included in these documents and analyses would be expected to require more resources of TCSAR, Teton County Fire and Rescue, and GTR ski patrol.

The proposed projects could add strain to emergency services and ski patrol within and around the GTR SUP area by displacing backcountry skiers and requiring emergency response in more remote and avalanche-prone locations. However, including South Bowl in the SUP area would ensure that the avalanche-prone terrain is controlled and monitored to optimize public safety. When considered cumulatively with other projects, the Proposed Action would add to the demand for search and rescue and ski patrol resources due to an increase in guest capacity and a need for more resources to ensure public safety.

3.7.5 Irreversible and Irretrievable Commitments of Resources

No additional irreversible and/or irretrievable commitments of resources have been identified that may impact public safety in association with the alternatives analyzed in this document.

3.8 Livestock and Grazing

3.8.1 Scope of the Analysis

The scope of this analysis of land use includes GTR's existing and proposed SUP areas and adjacent NFS and private lands. Pursuant to the regulations issued by the Secretary of Agriculture, the Forest Service is authorized to develop, administer, and protect range resources, and permit and regulate grazing use of all kinds and classes of livestock on all NFS lands and on other lands under Forest Service control.¹²⁸ While the Proposed Action specifically applies to uses of NFS lands within GTR's SUP boundary and the proposed boundary expansion areas, the proposed projects have the potential to alter land use patterns on adjacent NFS lands including those used by other permit holders.

In order to address the potential effects of the proposed projects on grazing allotments, this analysis considers the existing conditions and the proposed uses of land within the scope of analysis.

3.8.2 Federal, State, and Local Policy and Guidance

FOREST SERVICE MANUAL 2200 – RANGE MANAGEMENT

Forest Service Manual (FSM) 2200 outlines authorities, objectives, policies, and responsibilities related to range management on NFS lands. In managing livestock grazing on public rangelands and National Grasslands, the Forest Service's overall objectives are:

¹²⁸ USDA Forest Service 2005

1. To manage range vegetation to protect basic soil and water resources, provide for ecological diversity, improve or maintain environmental quality, and meet public needs for interrelated resource uses.
2. To integrate management of range vegetation with other resource programs to achieve multiple use objectives contained in Forest land and resource management plans.
3. To provide for livestock forage, wildlife food and habitat, outdoor recreation, and other resource values dependent on range vegetation.
4. To contribute to the economic and social well-being of people by providing opportunities for economic diversity and by promoting stability for communities that depends on range resources for their livelihood.
5. To provide expertise on range ecology, botany, and management of grazing animals.¹²⁹

1997 FOREST PLAN DIRECTION

As identified within the *1997 Forest Plan*, the study area is composed of three different Management Prescriptions: Management Prescription 4.2 – *Special Use Permit Recreation Sites*, located within GTR’s existing SUP area; Management Prescription 2.1.2 – *Visual Quality Maintenance*, located adjacent the GTR SUP area and overlapping the proposed South Bowl and Mono Trees areas; and Management Prescription 2.8.3 – *Aquatic Influence Zone*, located within and adjacent to the GTR SUP area and overlapping the proposed Mono Trees area. Refer to Figure 1 for a depiction of the existing *1997 Forest Plan* Management Prescriptions.

All Management Prescriptions within the study area are relevant to the analysis of Livestock and Grazing as the Proposed Action would convert approximately 866 acres of NFS lands, currently within Management Prescription 2.1.2 – *Visual Quality Maintenance* and Management Prescription 2.8.3 – *Aquatic Influence Zone*, to Management Prescription 4.2 – *Special Use Permit Recreation Sites*.

Management area prescriptions are inherently tied to use of NFS lands as they provide sets of objectives and requirements for specific land areas. Though dictating the primary uses and parameters that guide land management, designations are not exclusive, and provide for uses beyond the primary management objective. Guidelines and Management Prescription characterizations relevant to the livestock and grazing analysis for each Management Prescription are highlighted below in **Table 3.8-1**.

Table 3.8-1. 1997 Forest Plan Management Prescription Characterizations within the Study Area

Management Prescription	Livestock and Grazing Management
Management Prescription 4.2 – Special Use Permit Recreation Sites	<ul style="list-style-type: none"> Unless grazing activities are needed to meet recreation objectives, or unless authorized by special use or grazing permit, grazing of recreation stock and other livestock will not be allowed in special use recreation sites.

¹²⁹ USDA Forest Service 2005

Management Prescription 2.1.2 – Visual Quality Maintenance	<ul style="list-style-type: none"> • Maintaining the existing visual quality within major travel corridors with high quality natural vistas, while allowing livestock production, and other compatible commodity outputs. • During the summer and fall, you may encounter cattle or sheep grazing in openings.
Management Prescription 2.8.3 – Aquatic Influence Zone	<ul style="list-style-type: none"> • Recreational grazing must meet range standards for utilization of riparian vegetation. • Permitted stock holding, watering, and handling facilities within riparian vegetation are allowed only if appropriate mitigation measures are implemented to reduce negative impacts. • Proposed livestock watering facilities, corrals, and holding pastures within these lands are allowed only if appropriate mitigation measures are implemented to reduce negative impacts. • Existing livestock watering facilities, corrals, and holding pastures within these lands are allowed at permit issuance only if mitigation measures are implemented to reduce negative impacts.

Source: USDA Forest Service 1997

3.8.3 Affected Environment

EXISTING LAND USE

Land uses within and around GTR generally correspond their existing management area emphasis. As GTR is located within Management Prescription 4.2 – *Special Use Permit Recreation Sites*, it is managed primarily for recreation activities that occur throughout the year. For a complete discussion of visitation and recreation opportunities at GTR, refer to **Section 3.1**. Although land use within the GTR SUP area is defined by recreation, NFS lands within the GTR SUP area are also used for other purposes, including hunting and livestock grazing. As previously stated, management of NFS lands accommodates diverse uses that do not need to be specifically emphasized within a management area prescription.

Livestock grazing is a prominent land use, other than recreation, on NFS lands within, and adjacent to, the GTR SUP area. The Forest Service issues grazing permits to livestock producers that meet qualifications of the permit. Grazing permits generally are issued for a 10-year period. Annually, instructions are given to grazing permittees that outline grazing management, schedule, and coordination on NFS lands.

LIVESTOCK GRAZING PERMITTEES

GTR is located within the Teton Basin Ranger District of the CTNF. The Teton Basin Ranger District has 11 grazing allotments.¹³⁰ There are three grazing allotments in and adjacent to the study area. These include Leigh Creek, Fred’s Mountain, and Mill Creek / Teton allotments. Leigh Creek is located to the North of the existing GTR SUP boundary. The Fred’s Mountain Allotment is located on the northwestern edge of the GTR SUP boundary. Occasionally livestock from this allotment will drift into Rick’s Basin following user created routes and the permittee herds them back out of the area. If user created routes increase in this area, then this incidental livestock drift may increase. The Mill Creek / Teton Allotment borders the GTR SUP area along its western and southern edge (refer to **Exhibit 3.8-1**). The Mill Creek /

¹³⁰ USDA Forest Service 2021b

Teton Allotment intersects the existing GTR SUP area and the proposed South Bowl and Mono Trees areas. It is the only allotment that is within the study area and is the focus of this analysis.



Exhibit 3.8-1. Grazing allotments near GTR. GTR's existing SUP boundary is depicted in green, the proposed expansion areas are depicted in orange, and grazing allotments are shaded in blue.

The Mill Creek / Teton Allotment is approximately 6,600 acres in area. It intersects the existing GTR SUP area, parts of the proposed Mono Trees and South Bowl areas, and adjacent NFS lands designated as Management Prescription 4.2 – *Special Use Permit Recreation Sites*, Management Prescription 2.1.2 – *Visual Quality Maintenance*, and Management Prescription 2.8.3 – *Aquatic Influence Zone*, with the majority of its area in Management Prescription 2.1.2 – *Visual Quality Maintenance*. Approximately 110 acres or 1.7 percent of the total Mill Creek / Teton Allotment area shares land with the GTR SUP boundary.

The Mill Creek / Teton Allotment was permitted for 55 cows and calf pairs between June 16th and September 30th, 2021.¹³¹ The allotment is managed with a three-pasture rotation grazing system described in an allotment management plan. The rotation allows grazing from June 16 – July 20 on the Bustle Creek Pasture, July 20 – August 14 on the Mill Creek Pasture, and August 15 – September 30 on the Teton Canyon Pasture.¹³²

The portions of the GTR SUP area occupied by the Mill Creek / Teton Allotment are near the edge of the developed ski area. Within this area, GTR maintains a painted cattleguard on Ski Hill Road and a short

¹³¹ USDA Forest Service 2021c

¹³² Ibid.

section of fence within the existing SUP boundary on Forest Service Mill Creek Trail 131, in Papoose Creek.

Because the grazing permit season of use exists outside of winter ski area operations, only summer operations create opportunities for direct interactions between recreationists and livestock. When the fence structures mentioned in the previous paragraphs are not maintained by GTR or the trail gate is not closed by the public, cattle sometimes travel into the resort and towards the base area on private lands. In these instances, the grazing permittee is responsible for herding them back to their allotment and has done so successfully in the past.

The recently completed Colter lift, and the Mill Creek Trail, Rocky Mountain way and Colters Escape trails have created new opportunities for livestock to enter into the GTR SUP area. When livestock enter this area of the permit there is the potential for negative interactions with resort infrastructure and additional work can be created for GTR staff. It is anticipated that GTR will need to expand the drift fence and install cattleguards into their trails in order to keep the livestock out of this portion of the permit area if conflicts warrant such actions necessary.

The proposed Mono Trees and South Bowl areas exist in their natural, undeveloped states and do not currently include ski area infrastructure or activities.

3.8.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, existing livestock grazing permits and permittees and allotments would not change. Land uses authorized to these permittees would be subject to Forest Service terms and both permittees would continue to work out management strategies that best suit the coexistence of both land uses.

ALTERNATIVE 2 – PROPOSED ACTION

Implementation and operation of the projects included in the Proposed Action have the potential to impact land uses within GTR's existing and proposed SUP areas and on adjacent NFS lands.

Under the Proposed Action, approximately 741 acres of Management Prescription 2.1.2 – *Visual Quality Maintenance* and 125 acres of Management Prescription 2.8.3 – *Aquatic Influence Zone* would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites* to accommodate the development of lift-served skiing opportunities in the Mono Trees and South Bowl areas. These areas would be incorporated into the GTR SUP area. The resulting area in which the Mill Creek / Teton Allotment overlaps the ski area is approximately 720 acres or 11 percent of the allotment's total area.

Existing livestock and grazing could be further impacted through the densification of summer recreational opportunities that would occur under the Proposed Action as there would be a higher likelihood for direct interactions between recreationists and livestock. Particularly, in the area at the base of the Colter Lift where proposed multi-use trails and roads overlap the existing Mill Creek / Teton grazing allotment, there would be increased probability of land use conflicts (refer to **Section 3.1** for discussion of recreation patterns in the area). To address the potential increase in land use conflicts, a PDC is included in **Table 2.4-1** that states, "Should issues arise between the operations of existing livestock, specifically cattle, and grazing permit holders and GTR, GTR will cooperate with the Forest Service and livestock and grazing

permittee and take measures, including but not limited to, the installation of vegetative buffers and fencing to protect the interests of both permit holders as directed by the Forest Service. Any installation costs of vegetative buffers or fencing construction and maintenance would be borne by GTR.”

Further, an increase in visitor traffic on Ski Hill Road, which is within the Mill Creek / Teton allotment and is often crossed by grazing cattle, may have an impact on livestock and grazing patterns and feasibility (refer to **Section 3.5** for more information). Impacts associated with the densification of summer recreational opportunities are incremental in nature (e.g., adding to the existing trail network); however, they are anticipated to span the life of the projects and would thus reduce the suitability of the existing GTR SUP area for livestock grazing. The impacts to existing livestock grazing would be minimal as only a small portion (110 acres) of the Mill Creek / Teton Allotment is within the existing GTR SUP area, and no summer projects are proposed outside of the existing GTR SUP area.

Existing and future livestock and grazing could be impacted by the construction of the previously undeveloped South Bowl and Mono Trees areas. Construction of roads, facilities, trails, and lifts would occur in the summer and these activities may disrupt the area for livestock. While construction may pose a challenge to livestock grazing permittees and change grazing patterns for the duration of construction activities, the impacts would only occur temporarily. Vegetation would be restored following construction as indicated in the PDC (refer to **Section 3.12** for more information).

The development of ski terrain and glades in the Mono Trees and South Bowl areas may impact the available forage for livestock. The existing Mono Trees area is overlapped by dense timber and much of this area that cannot be grazed in its existing conditions will become available forage as lift lines, runs and trails are constructed. The difference in available forage in Mono Trees may result in changes to grazing patterns, which has potential to shift livestock use off the current permit area into the existing resort area without addition of new fencing and other barriers to livestock. The construction of roads, trails, and ski area terrain may change the vegetation and make routes that are attractive to livestock, changing grazing patterns in this area. These changes are addressed with the previously mentioned PDC included in **Section 2.4**. As a result, GTR and the grazing permittee would coordinate to establish fencing, cattle guards, and/or livestock management techniques to ensure that livestock remain in their permanent allotment. GTR would contribute funding, fence maintenance and other adequate support to ensure that suitable conditions exist for both operations. These measures would be further documented in GTR’s summer operating plan, or a specific livestock management plan prepared by GTR that would be reviewed by the CTNF prior to implementation of projects overlapping the Mill Creek / Teton Allotment.

The South Bowl area is not currently grazed by cattle due to the steep slope and difficulty accessing its terrain that makes it a less desirable livestock grazing location. Because of this, ski area operations in South Bowl are not likely to substantially impact livestock grazing patterns.

There are no summer activities proposed in the South Bowl and Mono Trees areas, and their associated facilities would only operate in the winter. However, summer maintenance in the areas may increase the chance of interactions between resort personnel and livestock, which may also result in changes to grazing patterns necessitating fencing or the installation of cattle guards. Overall, it is anticipated that proposed changes within the South Bowl and Mono Trees areas would increase the suitability of the South Bowl and Mono Trees areas for livestock grazing and change livestock use patterns.

ALTERNATIVE 3 – NO SUP EXPANSION

Under Alternative 3, there would be no expansion of the GTR SUP area. Livestock and grazing in this area would be similar to existing conditions; however, there would be more developed recreation opportunities in both the winter and summer. It is anticipated that with the proposed projects under Alternative 3, there would be higher summer visitation and trail and road development in a portion of the SUP area that is overlapped by the Mill Creek / Teton Allotment. This could create a higher likelihood for direct interactions between recreationists and livestock in the summer. However, these impacts would only occur in the small area of approximately 110 acres where the Mill Creek / Teton Allotment overlaps the SUP area and would have negligible impacts on livestock grazing patterns in the study area. The South Bowl and Mono Trees areas would remain in their natural, undeveloped states.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Under the Proposed Action, approximately 266 acres of Management Prescription 2.1.2 – *Visual Quality Maintenance* would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites* to accommodate the development of lift-served skiing opportunities in the South Bowl area. This area would be incorporated into the GTR SUP area. The resulting total area of the Mill Creek / Teton Allotment within the GTR SUP boundary would be approximately 220 acres or 3.3 percent of the allotment's total area.

The impacts of this alternative would be similar to that of the Proposed Action alternative, but at a smaller scale because of the smaller area of expansion. The Mill Creek / Teton Allotment only includes a small portion of the proposed South Bowl area, and the Mono Trees area would remain in its current natural, undeveloped state. As described under the Proposed Action alternative, summer construction and maintenance activities may result in temporary changes to livestock and grazing patterns in the South Bowl area. Vegetation modification may also result in changes in grazing patterns; however, there would be negligible impacts to livestock and grazing as a result of these changes.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Under the Mono Trees, No South Bowl alternative, approximately 475 acres of Management Prescription 2.1.2 – *Visual Quality Maintenance* and 125 acres of Management Prescription 2.8.3 – *Aquatic Influence Zone* would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites* to accommodate the development of lift-served skiing opportunities in the Mono Trees area. This area would be incorporated into the GTR SUP area. The resulting total area of the Mill Creek / Teton Allotment within the GTR SUP boundary would be approximately 610 acres or 9.2 percent of the allotment's total area.

The impacts of this alternative are also similar to that of the Proposed Action alternative, but only in the Mono Trees area. The South Bowl area would remain in its natural, undeveloped state. Most of the Mono Trees area overlaps with the Mill Creek / Teton Allotment, therefore the impacts to livestock and grazing patterns due to vegetation removal would be more substantial than that of Alternative 4. Specifically, modifications to vegetation, construction and maintenance activities, and increased summer visitation may reduce the suitability of the area for livestock and grazing and change grazing patterns. Refer to the discussion under the Proposed Action alternative for more information on the impacts in Mono Trees.

3.8.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Temporal Bounds

The temporal bounds for this cumulative effects analysis for livestock and grazing extend from GTR's inception as a resort in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for livestock and grazing are limited to public lands in Teton County, Wyoming and Idaho.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in this document. Past ski area development projects have been incorporated and analyzed in this document as part of the Affected Environment. Projects that could have cumulative impacts on livestock and grazing are analyzed below.

Although past, present, and reasonably foreseeable projects at GTR have resulted in and would continue to result in greater densification of recreation and the reduction of forage within certain portions of the project area, it is not anticipated that the currently proposed projects would substantially alter existing land uses. The proposed projects would cumulatively increase the density of recreation and reduce forage within the project area; however, the seasonality of the projects as well as their location would create minimal impacts to grazing patterns and human and livestock interactions for the allotments in and adjacent to the study area. Despite past ski area development, history has proven that a variety of land uses can occur within the study area.

To address the ever-changing character of NFS lands, the Forest Service would need to continually evaluate the suitability of different land uses in the project area and address conflicts between existing land uses. Through continued land management and adherence to the *1997 Forest Plan*, it is anticipated that the Proposed Action would have minor cumulative impacts on existing land use within the project area. Further, it is anticipated the CTNF would continue to meet a growing demand for a variety of uses on federal lands and do so by balancing the interests of a variety of permit holders operating on NFS lands through future actions and management.

3.8.6 Irreversible and Irretrievable Commitments of Resources

The conversion of 741 acres of Management Prescription 2.1.2 – *Visual Quality Maintenance* and 125 acres of Management Prescription 2.8.3 – *Aquatic Influence Zone* would be considered an irretrievable change to resource management direction on the CTNF; however, this commitment is not considered irreversible, as those areas could be reallocated in the future. No additional irreversible or irretrievable commitments of resources have been identified that may impact the livestock and grazing resource in association with the alternatives analyzed in this document.

3.9 Wilderness

3.9.1 Scope of Analysis

The scope of this analysis includes discussion of potential impacts of the proposed projects at GTR, including changes in its SUP boundary, as they relate to the JWS that is adjacent to the project area (i.e., the area generally encompassed by all five action alternatives) on NFS lands. No construction, and therefore no direct effects, would occur on NFS lands within the JSW. However, indirect impacts on its wilderness character and wilderness users could occur, as described below. The basis for this analysis is the [Wilderness Technical Report](#), prepared by SE Group.¹³³

3.9.2 Federal, State, and Local Policy and Guidance

WILDERNESS ACT OF 1964

The Wilderness Act was passed in 1964 to ensure that all areas of the United States are not modified by a growing population, expanding settlement, and growing mechanization. It designated 54 areas totaling 9.1 million acres in 13 different states. Under the Wilderness Act of 1964, the restrictions that apply to designated wilderness areas include:¹³⁴

- no commercial enterprises;
- no permanent roads;
- no temporary roads;
- no use of motor vehicles, motorized equipment, or motorboats;
- no landing of aircraft;
- no other form of mechanical transport; and
 - no structure or installation.

WYOMING WILDERNESS ACT OF 1984

The Wyoming Wilderness Act of 1984 added an additional 1.1 million acres of congressionally recognized wilderness to the NWPS, including the now 123,896-acre JSW (116,535 acres at its designation). Today there are roughly 3 million acres of wilderness within the State of Wyoming.¹³⁵ The Wyoming Wilderness Act of 1984 made note as to buffer zones around designated wilderness areas:

*Congress does not intend that the designation of wilderness areas in the State of Wyoming lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that nonwilderness activities or uses can be seen or heard from within any wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.*¹³⁶

¹³³ SE Group 2023e

¹³⁴ 16 United States Code 1131-1136

¹³⁵ Wyoming Wilderness Association n.d.

¹³⁶ U.S. Congress 1984

1997 FOREST PLAN DIRECTION

The *1997 Forest Plan* identifies three Management Prescriptions for designated wilderness. They are:

- 1.1.6 Designated Wilderness – Opportunity Class I (applies to portions of the Jedediah Smith Wilderness)
 - ♦ Goals and Objectives: Maintaining the natural diversity of wildlife species is the highest priority. Outstanding opportunities exist for solitude, self-reliance, and challenge. Trails are non-existent. No measurable downward trend in plant species composition and diversity. Forestwide standards and guidelines apply.
 - ♦ No motorized cross country or road and trail travel allowed (Standard).
 - ♦ Recreation Opportunity Spectrum (ROS) standard is primitive.
 - ♦ Visual Quality Objective (VQO) standard is preservation.
- 1.1.7 Designated Wilderness – Opportunity Class II (applies to areas of the Jedediah Smith Wilderness)
 - ♦ Goals and Objectives: Maintaining the natural diversity of wildlife species is a high priority and there is limited displacement of wildlife. Human activities are managed so that limited modification of natural succession only occurs at campsites, trails, and grazed areas. Soil erosion may occur. Forestwide standards and guidelines apply.
 - ♦ No motorized cross-country road and trail travel allowed.
 - ♦ ROS is primitive to semi-primitive nonmotorized.
 - ♦ VQO is preservation.
 - ♦ Evaluate and protect heritage resources for public visibility.
- 1.1.8 Designated Wilderness – Opportunity Class III (applies to areas of the Jedediah Smith Wilderness)
 - ♦ Goals & Objectives: Maintaining the natural diversity of wildlife species is a high priority but does not necessarily dominate other uses. Human activities are managed so that modification of natural succession only occurs at campsites and a moderate amount of soil erosion may occur. Forestwide standards and guidelines apply.
 - ♦ No motorized cross country or road and trail travel allowed.
 - ♦ ROS is primitive to semi-primitive nonmotorized.
 - ♦ VQO is preservation.

Much of the JSW that borders GTR is identified under Opportunity Class II. This means that the area is essentially unmodified. It is a natural environment where concentrations of visitors are low, but there is evidence of human use. The area may experience up to 20 visitors per day. It has a high to moderate opportunity for solitude during July-September, with a high opportunity for solitude during other times of the year. Users are expected to experience a moderate degree of self-reliance and challenge, and may see other users.¹³⁷

¹³⁷ USDA Forest Service 1997

GTR is managed as Management Prescription 4.2 – *Special Use Permit Recreation Sites*, whereas the adjacent areas overlapped by the proposed South Bowl and Mono Trees projects and associated SUP expansions are currently classified as Management Prescription 2.1.2 – *Visual Quality Maintenance*. The Management Prescription 2.1.2 – *Visual Quality Maintenance* is managed to maintain the existing visual quality through the high-quality vistas that are present in the area. Consequentially, the *1997 Forest Plan* would have to be amended to convert the Management Prescriptions of the South Bowl and Mono Trees areas from Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites* should the project be approved. The South Bowl project area is most proximate to the JSW boundary, but it is important to note that it does not directly border the JSW boundary and therefore would not increase the extent to which GTR borders the JSW. Although, the South Bowl Management Prescription would have to be amended, no portion of the proposed SUP expansion would occur in areas classified as designated wilderness (Management Prescription 1.1.6 – *Designated Wilderness-Opportunity Class I*, Management Prescription 1.1.7 – *Designated Wilderness-Opportunity Class II*, and Management Prescription 1.1.8 – *Designated Wilderness-Opportunity Class III*). The proposed Mono Trees area is located adjacent the southern corner of the existing GTR SUP boundary and does abut wilderness. Refer to **Figure 1** for a depiction of the proposed boundary expansion areas and *1997 Forest Plan* Management Prescriptions.

RECREATION OPPORTUNITY SPECTRUM

The Recreation Opportunity Spectrum (ROS) is a tool used by Forest Service managers to classify different outdoor experiences on NFS lands. The ROS class designated for JSW is *primitive to semi-primitive non-motorized*, which means that the JSW must maintain several pristine qualities to be consistent with the ROS. A few of these are dominance of unmodified and natural-appearing settings, and the absence of roads. To follow Forest Service management direction, the proposed projects cannot alter these qualities or the overall ROS class designation of *primitive to semi-primitive* for the JSW.

3.9.3 Affected Environment

GEOGRAPHY OF THE AREA

The 123,896 acres of the JSW is located both within the Teton Range subsection and the Madison Plateau subsection of the Targhee National Forest (TNF). It lies on the west slope of the Teton Range and extends from Yellowstone National Park south to Teton Pass. It is bordered by Teton Valley to the west and GTNP to the east.¹³⁸

The JSW was designated due to the unique karst limestone features, numerous caves, and outstanding scenery located within its boundaries. Additionally, Teton Canyon, South Leigh Canyon, and North Leigh Canyon are located in proximity to GTR, providing access points to the JSW.

The JSW boundary starts 100 feet northeast of the top of the ridge east of Mary's Nipple. The boundary is variable along the backside of the ridge all the way to South Leigh Canyon due to the slope of the ridge. Once the JSW boundary reaches the 8,000-foot contour along the backside of the ridge, it then jumps to the top of the ridge for the rest of shared boundary between GTR.

¹³⁸ USDA Forest Service 1997

USE OF THE AREA

Jedediah Smith Wilderness

Wilderness land use restrictions and management are imposed on JSW lands, but certain low-impact recreational activities are permitted, like hiking, backpacking, camping, and horseback riding.

The JSW is served by a 175-mile trail system that is used by a variety of recreationists including hikers, equestrians, and outfitters and guides.¹³⁹

The JSW is intensively used yearlong with approximately 113,000 visits in the summer.¹⁴⁰ Concentrated use occurs in the summer, as heavy snowfall in the winter creates access challenges. Individuals that do recreate in the JSW in the winter are often seeking out backcountry skiing or riding experiences.

Both summer and winter traffic enter the JSW southeast via the Teton Valley trailheads like Teton Canyon and Darby Canyon or northwest via the South-Leigh Creek Trail. The Coal Creek Trailhead is also used but requires traveling through the adjacent NFS land prior to reaching the JSW.¹⁴¹

From 1999 to 2009 visitation to wilderness areas nationwide has increased by 18 percent. It is projected that visitation would increase by 24 percent in the next ten years. Additionally, due to the COVID-19 Pandemic, wilderness visitation increased substantially as individuals were trying to find ways to safely get outdoors while social distancing. Typical wilderness visits last one to three days, with day visits being the most common. These visits are most often comprised of groups of two to five people, who venture to wilderness areas close to their homes or in their home state, foregoing traveling long distances.¹⁴²

Grand Targhee Resort

Due to the existing shared boundary between the JSW and GTR, there are current uses and operations of GTR that influence the wilderness area.

Maintenance and operation of GTR during the winter months currently generates noise; however, this has little to no impact on the soundscape of the JSW. Current noise levels in and around the base area range from a level similar to a quiet rural area (25 to 30 dBA) to an outdoor concert (120 dBA) (refer to **Section 3.3** for more information). As depicted in Figure 1, the shared boundary between GTR and the JSW is at the upper extent of the GTR SUP area, approximately 1.3 miles from the base area. Top terminals of a number of existing lifts are proximate to this boundary, producing a noise level equivalent to a snowmobile at a distance of 25 feet (100 dBA). Operational equipment, like snowmobiles and snowcats, travel near this shared boundary; however, they do not produce enough noise to measurably alter the soundscape of the greater JSW because of the short duration of time they are present in the area. As the majority of GTR's noise is generated by base area activity, there is little impact of existing GTR operations on the soundscape of the JSW during the winter.

¹³⁹ "Fast Facts – Wilderness Connect – University Of Montana" n.d

¹⁴⁰ Personal communication with Jeremiah Kunzman, 2022

¹⁴¹ "Summer Travel Map for the Palisades and Teton Basin Ranger Districts" 2000; "Winter Travel Map for the Palisades and Teton Basin Ranger Districts" 2000

¹⁴² Wilderness Connect 2020

During the summer months, construction activities at GTR have the greatest potential to impact the soundscape of the JSW. Past and ongoing projects have resulted in the use of helicopters and heavy machinery (a range of 70 dBA to 100 dBA) as well as the use of blasting and other specialized tools (comparable to thunder at 120 dBA) which would have any even greater impact on the soundscape; however, these alterations to the soundscape are temporary in nature and vary in their proximity to the JSW boundary. Summer programming and associated visitation is considerably less than winter and does not currently impact the JSW soundscape (refer to **Section 3.3** for more information).

Currently, GTR offers a variety of summer recreational experiences, including lift-served mountain biking, hiking, and equestrian trails. Bikers and hikers make up the majority of summer visits (refer to **Section 3.1** for more information). Use of the Dreamcatcher Lift facilitates increased use of the JSW in both summer and winter due to its convenient access. Specifically, summer use of GTR can cause both impacts to the natural environment and the user experience of the wilderness area. A higher influx of people from a more direct access point has the potential to diminish the perception of solitude that wilderness users have when recreating in the JSW. Although GTR may provide such access points in the summer months, a notable impact to solitude has not been attributed to ski area guests entering the wilderness from the ski area. Additionally, there are existing measures that help curb the extent of which GTR access points contribute to the dispersal of guests into the wilderness. Primarily these measures include closures and prohibiting overnight bags on lifts during the summer months. This is intended to limit the extent of which GTR is used as an access point.

In terms of impacts to the environmental conditions of the wilderness, hikers, backpackers, horses, and pack stock can deteriorate vegetation like grasses and sedges. In areas like the JSW, small amounts of use and visitation generally cause more impact. With high-use areas like trailheads, there is an existing condition of vegetation being highly modified and formalized routes that concentrate use to existing disturbed areas.

Although the JSW is still accessible in the winter, the main group of recreators are backcountry skiers. This type of winter usership has a limited ability to impact the experience and solitude for two reasons. The first is that the number of backcountry recreationists entering the JSW from GTR in the winter months is minimal (refer to **Section 3.1** for a description of existing backcountry use), and the second is that there is a minimal number of wilderness users accessing the JSW from other trailheads and access points during the winter months. Overall, visitation is substantially lower during winter months which creates increased opportunities for solitude. Over the snow travel generally does not damage grasses and sedges; therefore, winter use of the JSW does not have the capacity to cause measurable degradation in the same way that summer use has the potential to.

WILDERNESS CHARACTERISTICS

Although the Wilderness Act of 1964 provided a definition of “wilderness,” it did not establish any wilderness characteristics. The terms defined below were not established until decades after the Wilderness Act of 1964 went into effect, when the Forest Service determined that more in-depth criteria were needed to conceptualize what it means for certain lands to be better managed as “wilderness.” These characteristics are meant to be necessary qualifiers for any federal lands within a congressionally mapped wilderness area, and they are fully applicable as a basis of analysis for the JSW; however, it is important to note that these wilderness characteristics are not necessarily achieved in totality by all federal lands within congressionally mapped wilderness areas, and some may possess only one or two of these

characteristics. Although some areas may not possess all of the characteristics, all wilderness areas, including the JSW, must comply with the presented criteria to the highest extent possible.

Four out of the five are described below, and the JSW adheres to these four. The fifth characteristic, “Other Features of Value,” is not required by law for wilderness areas to adhere to and can also be subjective to personal experiences within the wilderness. Given this, only the four characteristics that the JSW adheres to are analyzed further..¹⁴³

- Untrammeled – which means that wilderness is “essentially unhindered and free from the actions of modern human control and manipulation. This quality is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness.”
- Natural – which describes that “wilderness ecological systems are substantially free from the effects of modern civilization. This quality is degraded by intended or unintended effects of modern people on the ecological systems inside the wilderness since the area was designated.”
- Undeveloped – which outlines that “wilderness is an area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, where man himself is a visitor who does not remain, and with the imprint of man’s work substantially unnoticeable. This quality is degraded by the presence of structures, installations, habitations, and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people’s ability to occupy or modify the environment.”
- Has outstanding opportunities for solitude or a primitive and unconfined type of recreation – which identifies that wilderness offers an opportunity for people that “is not directly about visitor experiences per se. This quality is degraded by settings that reduce these opportunities, such as visitor encounters, signs of modern civilizations, recreation facilities, and management restrictions on visitor behavior.”

Direct and indirect environmental consequences under each of the alternatives for this project are analyzed for their potential to affect these wilderness characteristics.

Further supporting these criteria is the wilderness stewardship performance (WSP). The WSP framework was established and implemented in 2015 with the purpose of acknowledging limitations of certain criteria and stark differences between wilderness areas across the nation. The WSP framework includes five categories of wilderness characteristics: 1) Natural, 2) Undeveloped, 3) Untrammeled, 4) Solitude, 5) Other Features of Value; along with two landscape level management categories: 1) Special Provisions and 2) Administration. Each category has specific elements included in them like invasive species, trails, agency management actions, opportunities for solitude, outfitter and guide management, etc. Wilderness managers select specific elements that they want their wilderness to try and achieve. Elements that the JSW is currently focusing on are solitude monitoring, recreation facility tracking, and outfitter and guide capacity study.¹⁴⁴

¹⁴³ Landres et al. 2015

¹⁴⁴ “Forest Service Agency Resources – Wilderness Connect for Practitioners.” 2020

Due to the characteristics being very similar in both the identified wilderness criteria and the WSP Framework, the categories of 1) Untrammeled, 2) Natural, 3) Undeveloped, and 4) Opportunities for Solitude or a Primitive and Unconfined Type of Recreation, would be used in this analysis.

Subjectivity of Wilderness Experience

Although the wilderness characteristics detailed previously offer well-defined standards for analyzing impacts on the wilderness experience of users in the JSW, wilderness experience is intrinsically subjective and intangible to the public. Wilderness experience impacts considered substantial to one individual may be considered trivial to another. This is important because the analysis of direct and indirect environmental consequences that follows is limited by the subjective nature of the wilderness experience. Although wilderness experience may be subjective to the public, as stated previously there are specific criteria that wilderness areas need to follow in order to be classified as wilderness. These criteria are the basis for this analysis.

3.9.4 Direct and Indirect Environmental Consequences

Impacts on local wilderness resources for each alternative have been analyzed based on potential use of the area and on four qualities of wilderness that are called out in the Wilderness Act of 1964 and further described by the Forest Service.¹⁴⁵ These qualities are “untrammeled,” “undeveloped,” “natural,” and “opportunities for solitude or primitive and unconfined recreation.”

Due to there not being an existing scale to determine effects to wilderness, a scale was created in order to quantify these effects. The scale has three categorizations, no effect, minorly adverse, and adverse. On this scale, adverse impacts are ones that directly impact the characteristics of the wilderness area and have a close spatial proximity to the wilderness area or are within the wilderness area. For example, this could be constructing a structure within the wilderness area which would adversely and directly impact the wilderness characteristic of undeveloped. Minorly adverse impacts are characterized as ones that indirectly impact the wilderness area or are temporary in nature and are further separated spatially from the wilderness area or limited to a confined portion of the wilderness area. For example, this could be in the form of noise generation from nearby construction, which would temporarily impact the solitude of the wilderness area. The no effect impact is given to actions that either do not directly or indirectly impact a wilderness characteristic, or there are specific PDC that are included that mitigate impacts. This scale is used throughout this section to understand specific impacts.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Use of Area

Under the No Action Alternative, activities at GTR would essentially be a continuation of existing conditions. Ambient visitation growth consistent with ski industry trends is anticipated. Similarly, current use and visitation of the JSW would increase in accordance with trends discussed under the *Affected Environment*. As previously mentioned, trends in outdoor recreation participation have been increasing over the past ten years, and as a result of the COVID-19 Pandemic, visitation to wilderness areas have been increasing.¹⁴⁶ It is expected that use and visitation to the JSW would continue to increase as

¹⁴⁵ Landres et al. 2015

¹⁴⁶ Wilderness Connect 2020

individuals are participating in outdoor recreation more and more. This trend would occur independently of the COVID-19 Pandemic.

Furthermore, the recently constructed Colter Lift within GTR's existing SUP boundary has the potential to increase accessibility to NFS lands and the JSW. This new lift could act as an additional access point, particularly in the winter months due to its proximity to the adjacent South Bowl backcountry terrain. As previously described, this terrain is not located within the JSW, but the new lift could prompt new user patterns of the area. Along with this, it is foreseeable that search and rescue operations could increase as backcountry skiers would have greater accessibility to adjacent backcountry terrain and the JSW through the Colter backcountry access points. The use of motorized vehicles and the like to perform search and rescue operations could increase in the JSW. These impacts to the JSW are expected to be minorly adverse, as the Colter Lift does not provide direct access to the wilderness area but rather enhances accessibility. Changes in use patterns and ways of accessing the JSW as associated with the Colter Lift are anticipated to be minorly adverse at this time.

Wilderness Characteristics

Untrammeled

Under the No Action Alternative, the CTNF would not authorize construction of MDP projects that are not already previously approved. No modern human control or manipulation would be introduced to the JSW, so there would be no alteration of its untrammeled wilderness character. With no alteration of the JSW's untrammeled wilderness character, there would be no effect, related to this issue.

Undeveloped

Similar to the untrammeled wilderness characteristic, no permanent improvements or human habitation would be introduced to the JSW, so there would be no alteration of its undeveloped wilderness character. Although the project would not directly introduce permanent improvements or human habitation, it could indirectly introduce structures constructed by users of the JSW. However, the Forest Service has no way of regulating this and can only perform remedial actions once these structures are found. With no direct alteration, there would be no effect under NEPA.

Natural

Due to the No Action Alternative resulting in a continuation of existing conditions, none of the effects of modern civilization would be introduced to the JSW ecological systems. Thus, there would be no alteration of its natural wilderness character and no effect related to this issue.

Opportunities for Solitude or Primitive and Unconfined Recreation

Under the No Action Alternative, there would be no reduction in opportunities for solitude or primitive and unconfined recreation. With no reduction in opportunities for solitude or primitive recreation, there would be no effect related to this wilderness characteristic.

ALTERNATIVE 2 – PROPOSED ACTION

Use of the Area

Alternative 2 – Proposed Action would result in a number of projects being implemented within the existing GTR SUP boundary, as well as two SUP expansion areas that would include additional project elements and ski area infrastructure. As stated previously, no expansion of the SUP would occur within

the JSW. Additionally, the boundary of the JSW exists 100 feet northeast of the ridgeline of Fred's Mountain and it is important to note that the proposed SUP boundary expansion would not abut anymore of the JSW than it does already.

Through the proposed expansion of multi-season and summer activities within the Summer Activity Zone (refer to **Figure 3**), summer visitation is anticipated to increase under the Proposed Action (refer to **Section 3.1** for more information). With the construction of the Fred's Mountain Top Guest Facility as included in the Proposed Action, along with an increase of summer users, an increase in access to the JSW is expected during non-winter months and transitional seasons.¹⁴⁷ This is because lift users would have the potential to enter the JSW directly from the lift.¹⁴⁸ The shared wilderness and SUP boundary adjacent to the proposed Fred's Mountain Top Guest Facility has the potential to generate additional trips into the JSW that could occur through unsanctioned access points. Similarly, the proposed maintenance access road in the South Bowl expansion has the potential to facilitate easier access to neighboring NFS lands and the JSW by creating a smooth and navigable surface proximate to the valley floor where existing hiking trails exist. However, through PDCs, impacts to the JSW would be mitigated (refer to **Table 2.4-1**). In summary, PDC are intended to create enforceable closures that prohibit guests from accessing the JSW through non-designated access points as is done under existing conditions. Signage, rope lines, and measures such as those preventing guests from bringing overnight bags on lifts would be designed around new project components and continue to be enforced. Furthermore, due to Fred's Mountain Top Guest Facility being located on top of the ridge, and the JSW being located lower in elevation, there is a possibility of material movement through the construction of this facility. No material is allowed to enter the wilderness from outside the boundary; therefore, specific PDC would be implemented in order to mitigate material entering the JSW from outside the boundary.

Although additional lifts are included in the Proposed Action, access to the JSW is not anticipated to increase as a result of these projects. The Dreamcatcher Lift, Crazy Horse Lift, and the South Bowl would increase the capacity of the ski area during the winter months; however, none of these proposed projects would provide access that doesn't already exist or direct access to the JSW. The JSW experiences limited use attributable to backcountry skiing and snowboarding as compared to the summer and overall visitation to the JSW is substantially lower during the winter months.

The South Bowl Lift would not provide direct access to the JSW; however, over the snow travel into the JSW could increase as skiers and snowboarders would be in closer proximity to prime backcountry terrain and have the potential to return back to the bottom terminal of the South Bowl Lift without skiing out to the valley floor (refer to **Figure 4**). This new extent of GTR would likely entice additional users to venture beyond the boundary of GTR into adjacent NFS lands that provide backcountry skiing opportunities (refer to **Section 3.1**); however, only a minimal number of users would be anticipated to use this new configuration to access the JSW, as this would entail much more involved route finding and

¹⁴⁷ Transitional seasons are defined as the early and late ski seasons, when both winter and summer recreational activities are viable. Inconsistent snow cover is commonly found during the transitional seasons, when ski areas are open for the skiing/snowboarding public and at the same time, the southern aspect slopes are mostly dry or not entirely covered with snow; for example, the northern aspect slopes at GTR may have snow cover suitable for skiing/snowboarding, while the southern aspect slopes are dry enough to provide for hiking/backpacking. While periods of inconsistent snow cover are more likely during the early and late season, they may also occur mid-season.

¹⁴⁸ Social trails are defined as trails created by erosion due to foot traffic from people and animals. They are not part of the official NFS lands trail network and are indication of human disturbance.

longer travel during potentially harsh winter conditions. This could potentially increase the likelihood of visitor encounters within the JSW area immediately adjacent to GTR, thereby minimally reducing opportunities for solitude and primitive and unconfined recreation. However, this changed condition is not anticipated to generate a substantial number of users and in the context of the greater extent of the JSW opportunities for solitude and primitive and unconfined recreation would not be affected by the project.

The proposed avalaunchers that would be necessary to mitigate avalanche risk and ensure public safety in the South Bowl area are located southeast of the South Bowl Lift in the lower extent of the proposed terrain pod (refer to **Figure 4**). The avalaunchers would create temporary disturbances to the soundscape and thus the JSW. The soundscape would resemble a range from noise levels of a quiet rural area (25 to 30 dBA) to thunder (120 dBA), differing from the current conditions that range from a quiet rural area to a snowmobile at a distance of 25 feet (100 dBA) (refer to **Section 3.3** for more information). Additionally, through the use of helicopters and chainsaws to construct proposed lift projects and remove trees in the South Bowl area, the temporary soundscape of the JSW would also be impacted. The noise levels during periods of construction could range from 80 dBA to 120 dBA (refer to **Section 3.3** for more information). Depending on the perception of individual users, opportunities for solitude within the JSW could be reduced in the long-term and short-term as a result of avalanche mitigation and construction operations. Overall, due to the new Fred's Mountain Top Guest Facility and line of site voices, there would be minor adverse impacts on the quiet nature of the soundscape of the JSW.

Wilderness Characteristics

Untrammelled

The Proposed Action would not involve installation of any infrastructure within the JSW. All construction-related activity and equipment, along with subsequent operation and maintenance of the proposed projects after their completion, would occur outside the JSW. However, under the Proposed Action there would be the possibility of increased use associated with over the snow travel as the proposed lifts provide proximal access to the JSW. Therefore, possible trammeling within the JSW. Similarly, increased trammeling may occur in the summer, as the proposed Summer Activity Zone (refer to **Figure 3**) is expected to increase summer visitation. With the proximal location of Fred's Mountain Top Guest Facility, users would have easier access to the JSW and thus the potential to venture off trail and into the wilderness area exists. This could increase the trammeling of the JSW during the summer months; however, it would be limited an extremely small area in the context of the greater JSW. Specific PDC would be implemented in order to mitigate effects to the JSW; however, the untrammelled quality of these lands may be reduced, and the impact would be minorly adverse.

Undeveloped

Under the Proposed Action there would not be installation of any infrastructure within the JSW. All infrastructure required to facilitate operation of the proposed projects would be installed outside the JSW (see Figure 2). Therefore, the Proposed Action would not introduce any permanent improvements or human habitation to the JSW, so the undeveloped quality of these lands would not be reduced and there would be no effect.

Natural

The Proposed Action would not result in the construction or operation of any infrastructure within the JSW, nor would it involve any modification of management strategies within those lands. However, the

Proposed Action would result in effects (direct or indirect) of modern people on the ecological systems existing within the JSW. As stated in **Section 3.13** of the DEIS, the Proposed Action has the potential to directly and indirectly impact both grizzly bear and bighorn sheep habitat within the project area. Furthermore, this would result in indirect disturbance to the ecological processes occurring within the JSW. This may cause the JSW to not be substantially free from the effects of modern civilization. For this reason, the natural quality of these lands would be reduced, and the effect would be minorly adverse.

Opportunities for Solitude or Primitive and Unconfined Recreation

At its closest point, Fred's Mountain Top Guest Facility would be approximately 100 feet from the JSW. Depending on the perception of individual users, opportunities for solitude or primitive and unconfined recreation from within the JSW could be reduced in both the short-term and the long-term.

In the short-term, the Proposed Action would cause temporary audio and visual impacts on users of the JSW during the construction phase. Impacts could include visibility of helicopters, machinery, and work crews; and audible construction activities, such as rock drilling, blasting, and use of helicopters. As stated previously, the soundscape of the JSW could be impacted due to noise levels ranging from 80 dBA to 120 dBA (refer to **Section 3.3** for more information). With the construction of Fred's Mountain Top Guest Facility, events at the top of the mountain may also alter the JSW soundscape in areas of the wilderness proximate to the existing and proposed GTR SUP boundary. Because extents of the JSW further from GTR would not be impacted and the overall soundscape of the JSW would resemble existing conditions, impacts to the soundscape of the JSW are expected to be minorly adverse.

In the long-term, operation of Fred's Mountain Top Guest Facility, Dreamcatcher Lift, South Bowl Lift, and Crazy Horse Lift may create visual impacts for users of the JSW as facilities and operations, towers, and chairs would be visible from Mary's Saddle trail and the northeast side of Fred's Mountain, respectively (see **Section 3.2** for more information). Furthermore, considerable development can already be seen from Table Mountain (refer to **Appendix A** of the **Scenery Technical Report** for images of the existing conditions and visual simulations for each view and **Section 3.2** for more information) in the distance, and visibility of additional structures could negatively affect the sense of solitude and reduce opportunities for primitive and unconfined recreation for users of the JSW along the boundary with the project area. Along with this, new proposed downhill mountain biking trails may increase the visitation to GTR during the summer, thus contributing to the long-term impacts of the proposed project to the perceived solitude within the JSW's boundaries (refer to **Figure 3**). In addition, auditory impacts associated with operation of the South Bowl avalaunchers, and accessibility impacts are possible in the long-term. These potential effects to opportunities for solitude or primitive and unconfined recreation depend on the perception of the development to individual users of the JSW. However, they would be year-round, including during transitional seasons.

PDC that would be followed to mitigate impacts to the JSW include prohibiting overnight backpacks on lifts that provide access to the JSW. Overall, short-term and long-term effects related to opportunities for solitude or primitive and unconfined recreation would be minorly adverse.

ALTERNATIVE 3 – NO SUP EXPANSION

Use of Area

Alternative 3 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information). Although effects are similar, Alternative 3 would have less effect

on the JSW soundscape due to no SUP expansions being included in this alternative (refer to Alternative 2 – Proposed Action above for more information).

Wilderness Characteristics

Untrammeled

Alternative 3 would have similar effects as described in Alternative 2 – Proposed Action. Although effects are similar, Alternative 3 would have a lesser effect overall as compared to the Proposed Action (refer to Alternative 2 – Proposed Action for more information). However, with the increase in visitation during the summer months, the Fred’s Mountain Top Guest Facility, and presence of guests in this area, there is an increased likeliness for trammeling to occur in the nearby JSW. As in the case of the Proposed Action Alternative, this trend would be limited an extremely small area in the context of the greater JSW. Specific PDC would be implemented in order to mitigate effects to the JSW; however, the untrammeled quality of these lands may be reduced, and the impact would be minorly adverse under Alternative 3.

Undeveloped

Similar to as described in the Proposed Action, under Alternative 3 there would not be installation of any infrastructure within the JSW (refer to Alternative 2 – Proposed Action for more information). All infrastructure required to facilitate operation of the proposed projects would be installed outside the JSW (see **Figure 2**). Therefore, Alternative 3 would not introduce any permanent improvements or human habitation to the JSW, so the undeveloped quality of these lands would not be reduced and there would be no effect.

Natural

As described in Alternative 2 – Proposed Action, Alternative 3 has the potential to create the same effects (refer to Alternative 2 – Proposed Action for more information). However, the effects would be less adverse as compared to the Proposed Action due to the proposed projects only occurring in the existing GTR SUP area.

Opportunities for Solitude or Primitive and Unconfined Recreation

Alternative 3 would have the same effect on opportunities for solitude or primitive and unconfined recreation as the Proposed Action. (refer to Alternative 2 – Proposed Action for more information). However, compared with the Proposed Action, Alternative 3 would result in less of a visitation increase to the JSW, as the South Bowl area would not be created. Users would only be able to access the JSW through the Crazy Horse Lift, Dreamcatcher Lift, or Fred’s Mountain Top Guest Facility. Thus, direct and indirect effects related to opportunities for solitude or primitive and unconfined recreation would be minorly adverse.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Use of the Area

Alternative 4 would have similar effects as the Proposed Action (refer to Alternative 2 – Proposed Action for more information). During parts of the year when lifts would continue to operate, and southern aspect slopes would be dry enough for hiking at the same time, the Dreamcatcher Lift, Crazy Horse Lift, Fred’s Mountain Top Guest Facility, and the South Bowl Lift/expansion would put users in closer proximity to

the JSW (refer to **Figure 2 and 4**). Overall, increased accessibility and decreased solitude would decrease the primitive nature of the JSW.

Wilderness Characteristics

Untrammeled

Alternative 4 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information). Summer use would increase due to the proposed Summer Activity Zone. This would lead to more people utilizing Fred’s Mountain Top Guest Facility, and thus increased potential for trammeling within the JSW. Additionally, there could be an increase in backcountry skiing use during the winter, and due to this area being avalanche prone, search and rescue operations could increase. This could increase the use of motorized vehicles and the like to perform these operations, impacting the untrammeled nature of the JSW. As in the case of the Proposed Action, this trend would be limited to an extremely small area in the context of the greater JSW. Specific PDC would be implemented in order to mitigate effects to the JSW. Therefore, under Alternative 4 impacts to the untrammeled quality of the JSW would be minorly adverse.

Undeveloped

Similar to as described in the Proposed Action, under Alternative 4 there would not be installation of any infrastructure within the JSW (refer to Alternative 2 – Proposed Action for more information). All infrastructure required to facilitate operation of the proposed projects would be installed outside the JSW (see **Figure 2**). Therefore, Alternative 4 would not introduce any permanent improvements or human habitation to the JSW, so the undeveloped quality of these lands would not be reduced and there would be no effect.

Natural

Similarly, Alternative 4 would have the same effect on the natural wilderness characteristic as the Proposed Action would (refer to Alternative 2 – Proposed Action for more information). In accordance with **Section 3.13**, although none of the grizzly bear or bighorn sheep habitat, including designated critical habitat, within the JSW would be directly disturbed by the project facilities, critical habitat within the proposed South Bowl area would be directly impacted. Therefore, the ecological processes occurring within the JSW would be altered to some degree by implementation of Alternative 4, as animals would relocate to this area. This may cause the JSW to not be substantially free from the effects of modern civilization. For this reason, the natural quality of these lands would be reduced, and the effect would be minorly adverse.

Opportunities for Solitude or Primitive and Unconfined Recreation

As described in the Proposed Action, Alternative 4 would have similar effects on opportunities for solitude or primitive and unconfined recreation (refer to Alternative 2 – Proposed Action for more information). Alternative 4 would cause temporary audio and visual impacts on users of the JSW during the construction phase. In addition, visual impacts associated with continued operation of Fred’s Mountain Top Guest Facility and auditory impacts associated with operation of the South Bowl avalaunchers are possible in the long-term. These potential effects on opportunities for solitude or primitive and unconfined recreation depend on the perception of the development to individual users of the JSW (refer to Alternative 2 – Proposed Action for more information). However, they would be year-

round, including during transitional seasons. Direct and indirect effects related to opportunities for solitude or primitive and unconfined recreation would be minorly adverse.

ALTERNATIVE 5 – MONO TREE, NO SOUTH BOWL

Use of the Area

Alternative 5 would have similar effects as the Proposed Action (refer to Alternative 2 – Proposed Action for more information). However, Alternative 5 would have a lesser effect overall as compared to the Proposed Action, due to no South Bowl Expansion. There would still be increased accessibility to the JSW from Dreamcatcher and Crazy Horse Lifts, decreasing the primitive nature of the JSW overall.

Wilderness Characteristics

Untrammeled

Alternative 5 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information). Although effects are similar, Alternative 5 would have a lesser effect overall as compared to the Proposed Action. This is due to Alternative 5 not including the South Bowl expansion. Similarly with increased summer use, Fred's Mountain Top Guest Facility and proposed lifts could result in increased trammeling of the JSW. As in the case of the Proposed Action Alternative, this trend would be limited to an extremely small area in the context of the greater JSW. Specific PDC would be implemented in order to mitigate effects to the JSW. Therefore, under Alternative 5 impacts to the untrammeled quality of the JSW would be minorly adverse.

Undeveloped

Similar to as described in the Proposed Action, Alternative 5 would have no effect on the undeveloped qualities of the JSM (refer to Alternative 2 – Proposed Action for more information). Specifically Alternative 5 would create a lesser effect on the undeveloped nature of wilderness due to not including the South Bowl expansion. Additionally, all infrastructure required to facilitate operation of the proposed projects would be installed outside the JSW, so there would be no effect on the undeveloped nature of these lands.

Natural

As described in Alternative 2, Alternative 5 has the potential to create the same effects (refer to Alternative 2 – Proposed Action for more information). However, effects would be less adverse, as compared to the Proposed Action, due to the proposed Mono Trees expansion being spatially removed from the JSW. Therefore, there would be no effect on the natural nature of the JSW.

Opportunities for Solitude or Primitive and Unconfined Recreation

Alternative 5 would have the same effect on opportunities for solitude or primitive and unconfined recreation as the Proposed Action did. However, compared with the Proposed Action, Alternative 5 would result in less of a visitation increase to the JSW, as the South Bowl area would not be created. Users would only be in close proximity to the JSW through the Crazy Horse Lift, Dreamcatcher Lift, or Fred's Mountain Top Guest Facility. Thus, direct, and indirect effects related to opportunities for solitude or primitive and unconfined recreation would be minorly adverse (refer to Alternative 2 – Proposed Action for more information).

3.9.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the GTR SUP area and on the adjacent JSW and NFS lands, as well as throughout Teton County, Wyoming.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for wilderness resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for wilderness resources are limited to public and private lands in the vicinity of GTR's operational area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the DEIS. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment discussion. Projects that could have cumulative impacts on wilderness are analyzed in the following discussion.

Many of the projects that have the potential to cumulatively impact wilderness resources are *1997 Forest Plan* revisions, monitoring, construction of mountain biking and hiking trails, and development of additional ski terrain. Construction of the Colter Lift coupled with these proposed projects could increase the visitation to the JSW which could impact the opportunity of solitude or primitive unconfined recreation within the JSW. Additionally, future projects that have yet to be implemented and are included in these documents and analyses would be expected to further diminish the opportunity for solitude or primitive unconfined recreation that can be found in wilderness areas. Not only future projects located within the GTR's SUP, but adjacent projects like residential construction, increased traffic, and increased and retained use of the JSW due to the COVID-19 pandemic have cumulative effects to wilderness characteristics of the JSW.

The expansion of GTR's SUP boundary and development of lift-served skiing in the Mono Trees and South Bowl area specifically would impact areas not previously influenced by ski area operations, further extending the reach of GTR's influence to the adjacent JSW through audio and visual impacts when considered cumulatively with other projects.

3.9.6 Irreversible and Irretrievable Commitments of Resources

The addition of ski trails, lifts, and associated infrastructure would represent irretrievable effects to wilderness characteristics of the JSW adjacent to GTR. However, the implementation of the proposed projects are not considered irreversible commitments of these resources because operations could be discontinued, returning GTR to its natural state. No additional irreversible and/or irretrievable commitment of resources have been identified that may impact wilderness resources in association with the alternatives analyzed in this document.

3.10 Air Quality

3.10.1 Scope of the Analysis

This air quality review assesses impacts that air emissions from activities related to projects at GTR would have on air quality in the region. Although air pollution can impact areas far away as a result of wind direction, temperature, and other factors, the spatial scope of this analysis is the airshed of the CTNF and of Teton County, Wyoming and Idaho. The temporal scope of this analysis spans from the ski area's inception in 1969 through the foreseeable future in which GTR can be expected to operate.

This analysis summarizes the *Air Quality Technical Report for the Grand Targhee Master Development Plan Projects Environmental Impact Statement*, referred to as the [Air Quality Technical Report](#).¹⁴⁹ Refer to the **Air Quality Technical Report** for more information on methodology, data sources, definitions, 1997 Forest Plan direction, and emissions data.

3.10.2 Federal, State, and Local Policy and Guidance

FEDERAL POLICY AND GUIDANCE

Clean Air Act

In 1970, the Clean Air Act (CAA) established national ambient air quality standards for common pollutants to reduce the presence of pollution across the United States. The CAA requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for common pollutants, and as a result the EPA defined six criteria pollutants: particulate matter, ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. The most recent NAAQS for these pollutants are included in **Table 3.10-1** below.

Table 3.10-1. EPA NAAQS

Pollutant	Primary/ Secondary ¹	Averaging Time	NAAQS Level ²
Carbon Monoxide	primary	8 hours	9 ppm
		1 hour	35 ppm
Lead	primary and secondary	Rolling 3-month average	0.15 µg/m ³
Nitrogen Dioxide	primary	1 hour	100 ppb
	primary and secondary	1 year	53 ppb
Ozone	primary and secondary	8 hours	0.070 ppm

¹⁴⁹ SE Group 2023f

PM2.5 (particulate matter of 5 microns or less)	primary	1 year	12.0 ug/m3
	secondary	1 year	15.0 ug/m3
	primary and secondary	24 hours	35 ug/m3
PM10 (particulate matter of 10 microns or less)	primary and secondary	24 hours	150 ug/m3
Sulfur Dioxide	primary	1 hour	75 ppb
	secondary	3 hours	0.5 ppm

Source: U.S. EPA 2021

Notes: ¹ Primary standards provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

² ppm=parts per million; ug/m3= micrograms per cubic meter

The CAA was amended in 1977 and 1990. The 1977 CAA Amendments established Class I, II, and III areas, which have strict air quality standards and are only allowed a certain amount of air quality deterioration. These areas must comply with the NAAQS listed above. Class I and II airsheds proximate to the study area are discussed in detail under **Section 3.10.3**.

1997 Forest Plan Standards and Guidelines

The Targhee Forest Plan provides goals, standards, and guidelines for air quality. The desired future conditions for air quality are that it “*complies with Clean Air Act and other state requirements for Utah, Wyoming, and Idaho.*”¹⁵⁰

The 1997 Forest Plan establishes a monitoring and evaluation plan for air quality, focused mostly on Class I and II areas. The plan states that “*monitoring should be conducted in designated wilderness on the Forest; and other nonwilderness areas upwind from and adjacent to Class I airsheds and Class II wilderness airsheds managed by other entities.*”¹⁵¹ The plan identifies visibility as the air quality indicator, to be measured using two methods: timed-exposure camera(s) with density-monitoring devices and aerosol particle evaluation supplemented by photographs.

The 1997 Forest Plan also specifically discusses air quality monitoring for the JSW, a Class II wilderness area, listing the following methods:¹⁵²

¹⁵⁰ USDA Forest Service 1997

¹⁵¹ Ibid

¹⁵² USDA Forest Service 1997

1. *Monitor acid deposition in Wilderness lakes. Specifically, Two Island Lake is extremely sensitive to acid deposition; and Middle Granite Lake is more typical of Wilderness lakes with some buffering capacity. Reference for more information the water quality survey conducted in 1992 by personnel from the Targhee and Bridger-Teton National Forests.*
2. *Monitor visual air quality by means such as periodic photography. Consider establishing a monitoring station at the Grand Targhee ski area or other location which would permit observation of air quality in both the Wilderness and Grand Teton National Park.*

STATE POLICY AND GUIDANCE

Wyoming

The State of Wyoming Department of Environmental Quality (Wyoming DEQ) Air Quality Division (AQD) regulations also apply to this proposed project. These regulations include clean air goals and standards, permits for major and area source emissions, and permits for outdoor burning, all in compliance with the Wyoming Environmental Quality Act. In addition, the State of Wyoming supports Class I and II designations as described previously.

Under the Wyoming Environmental Quality Act, the State established the Wyoming Air Quality Standards and Regulations (WAQSR) which describe the requirements for air quality criteria such as ambient standards, general emissions, permitting, and monitoring. Refer to the **Air Quality Technical Report** for more information.

Idaho

The State of Idaho Department of Environmental Quality (Idaho DEQ) has goals, regulations, monitoring programs, and permits intended to maintain good air quality in the region. Idaho DEQ regulations are guided by the CAA and other national policies. The Idaho DEQ monitors air quality through modeling, meteorology, emission inventory, and transportation planning across the State of Idaho and collects hourly data from over 35 monitors for various NAAQS pollutants.¹⁵³ The Idaho DEQ also requires permits for construction projects to buildings or facilities that may emit air pollutants.

LOCAL POLICY AND GUIDANCE

Teton County, Wyoming does not have additional air quality policy; instead, the county air quality guidance is consistent with the Wyoming Air Quality Standards and Regulations and AQD programs and permits.¹⁵⁴ The same is true for Teton County, Idaho and Idaho DEQ standards and regulations.

3.10.3 Affected Environment

This analysis focuses on pollutants relevant to regional air quality and GTR's impacts. These include pollutants generated as a result of vehicle use, resort operations, and construction activities: CO, NO₂, SO₂, PM₁₀, PM_{2.5}, carbon dioxide (CO₂), and methane (CH₄). This analysis also considers ozone, a secondary pollutant generated through chemical reactions under ultraviolet radiation (sunlight) between NO_x (which includes both NO and NO₂) and other volatile organic molecules generated by cars, power

¹⁵³ Idaho DEQ 2021

¹⁵⁴ Teton County Wyoming n.d.

plants, and other activity. The only NAAQS that does not apply to this report is Lead, since it is not generated by GTR's operation or construction activities.

RELEVANT EMISSIONS

CO₂ and CH₄ are not included in the EPA's NAAQS, however, both are relevant emissions impacted by transportation, resort operations, and construction practices. These emissions are not regulated in the same way as NAAQS and do not have an extensive monitoring network. The EPA measures these emissions primarily through inventories of energy data, agricultural data, and other national statistics and through reporting programs. These factors combined provide annual estimates of national emissions production.

The United States Energy Information Administration (EIA) also provides adjusted CO₂ emissions data for all states within the United States between 1980 and 2020. In Wyoming, transportation sector emissions include uses of petroleum products and natural gas. Transportation emissions in Wyoming amounted to an average of 7.8 million metric tons of CO₂ annually between 2010 and 2020.¹⁵⁵ This translates to an average of approximately 21,300 metric tons of CO₂ emissions per day.

REGIONAL AIR QUALITY

The Air Quality Index (AQI) is a measure of air quality used by the EPA that describes the air quality of an area. Between 2001 and 2021, the AQI for Teton County has ranged from "good" to "moderate." There have been several isolated time periods where the air quality was "unhealthy for sensitive groups" or "unhealthy."¹⁵⁶ It is recognized that while air quality has generally been improving, certain events such as wildfires can compromise air quality in Wyoming and Idaho. Wildfire smoke contributes primarily to PM_{2.5} and ozone levels in the atmosphere. Wildfire smoke from areas as far as Oregon or Washington can impact air quality in Wyoming. The visibility and air pollution in Teton County has been impacted by wildfire smoke, which is evident in the data discussed below.

This analysis makes use of existing air quality data for NAAQS pollutants (CO, NO_x, Ozone, PM_{2.5}, PM₁₀, SO_x) from the closest active monitors to the project area. Active Air Quality Monitors closest GTR and used in this report are shown in **Table 3.10-2**.

Table 3.10-2. Air Quality Monitors near GTR

Monitor	Location	Pollutants Measured	Approximate distance from GTR (miles)
Grand Teton NP – Science School	GTNP	PM _{2.5} , PM ₁₀ , Ozone	20
Jackson SLAM Site	Jackson, WY	PM ₁₀ , PM _{2.5}	24
Yellowstone National Park – Old Faithful Snow Lodge	YNP	CO, NO ₂	40

¹⁵⁵ EIA 2021

¹⁵⁶ U.S. EPA 2022a

Idaho Falls IDEQ Station	Idaho Falls, ID	PM2.5	60
Soda Springs	Soda Springs, ID	SO ₂	84

Source: Air Quality Technical Report

Class I and II Airsheds

The GTR project area and the surrounding Class I and II Wilderness areas are not located in any United States Environmental Protection Agency (U.S. EPA) designated non-attainment areas for ozone, particulate matter, carbon monoxide, lead, nitrogen dioxide, or sulfur dioxide.

Wyoming is home to numerous state and national parks, monuments, and wilderness areas. Among these are a number of federal Class I and Class II areas. Class I areas near GTR (in order of distance from GTR) are GTNP, Yellowstone National Park, Teton Wilderness, Washakie Wilderness, Bridger Wilderness, Fitzpatrick Wilderness, and North Absaroka Wilderness. Class II areas near GTR (in order of distance from GTR) are JSW and Gros Ventre Wilderness.

Two nearby Class I areas, GTNP and Yellowstone National Park (YNP), can provide insight into general air quality trends near the project area. The closest ozone, PM2.5, and PM10 monitor is located approximately 20 miles from GTR in GTNP. Daily average ozone at GTNP in the previous three years and up to the last 8 years has remained below the NAAQS value of 0.070 ppm. PM10 in the last 10 years has also remained below NAAQS values in GTNP. Additionally, the closest NO₂ and CO monitor to GTR is in YNP, approximately 40 miles from the project area. Both NO₂ and CO concentrations have remained well below NAAQS in the region since 2019. Refer to the **Air Quality Technical Report** for more information on existing emissions data.

Population Centers

The nearest population centers in proximity to GTR are Jackson, Wyoming (~25 miles south) and Idaho Falls, Idaho (~60 miles southwest). In the last 10 years, Jackson's AQI has been primarily "good" to "moderate," with rare events of "unhealthy for sensitive groups" and "unhealthy."¹⁵⁷ Similarly, Idaho Falls' AQI since 2001 has been primarily "good" to "moderate" with occasional "unhealthy" days that are most likely attributable to wildfire smoke.¹⁵⁸

There is a monitor in Jackson, Wyoming which measures PM10 and PM2.5 and a monitor in Idaho Falls that measures PM2.5. Since 2019, PM10 has remained below the NAAQS value, however, PM2.5 spiked above NAAQS concentrations in the summers of 2020 and 2021 in both Jackson and Idaho Falls. As described earlier in this section, while general air quality in the region is improving, the frequency of wildfire events has recently increased, creating challenges for maintaining good air quality. It is important to note that other than these two events, the air quality in both areas has remained below the NAAQS for PM2.5 since 2019.

¹⁵⁷ U.S. EPA 2022a

¹⁵⁸ Ibid

Lastly, to understand SO₂ pollution around GTR, the nearest monitor collecting SO₂ data is in Soda Springs, Idaho. Daily averages remained well below NAAQS levels in Soda Springs between 2019-2021.

Emissions from Vehicle Traffic

The National Emissions Inventory (NEI) is a dataset from the U.S. EPA that estimates emissions of criteria pollutants from point, nonpoint, on road mobile, and nonroad mobile sources. On road mobile emissions sources include cars and trucks (highway vehicles), and nonroad mobile sources include lawn and garden equipment (off-highway vehicles). Highway and off-highway vehicle emissions of CO, NO_x, SO_x, and PM_{2.5} were collected from the 2020 NEI for the State of Wyoming and Teton County. These emissions results are included in the Air Quality Technical Report and were used **Table 3.10-3**.

Table 3.10-3. Wyoming Highway Vehicle Emissions, 2020

Source	Pollutant	State of Wyoming	
		Total Emissions (tons/year)	Total Emissions (tons/day)
Highway Vehicle	CO	59,054	162
	NO _x	17,354	48
	SO ₂	34.9	0.1
	PM _{2.5}	465	1.3
Off-Highway	CO	29,658	81
	NO _x	17,938	49
	SO ₂	29.6	0.1
	PM _{2.5}	612	1.7

Source: Air Quality Technical Report

EMISSIONS FROM SKI AREA OPERATIONS

Emission sources considered as a result of ski area operations include the resort's power use, highway vehicle traffic driven by resort operations, and construction vehicles. Additionally, GTR may require occasional maintenance vehicle trips on their existing infrastructure when the needs arise, which could require the use of heavy-duty construction vehicles.

Power

Power is required to service lifts, guest services facilities, snowmaking, lighting, and other essential components to a ski area. GTR ski area operations are powered by Fall River Rural Electric Cooperative (FRREC) in Teton County, Idaho. FRREC power is driven by 95 percent renewable sources (84 percent

hydroelectric, 10 percent nuclear, and 1 percent wind).¹⁵⁹ The remaining 5 percent comes from the local energy market.¹⁶⁰ Because GTR is powered by a source that is 95 percent renewable rather than sourced by fossil fuels, the amount of power used by GTR and its ski area operations does not measurably contribute to concentration levels of pollutants like CO₂, NO_x, SO₂, CH₄, etc.. GTR does have emergency and backup generators for a number of its facilities and infrastructure. These do contribute emissions from maintenance, testing, and instances when they are used. Due to the irregular and infrequent use of emergency and backup generators, their emissions are not specifically quantified.

Vehicle Traffic at GTR

GTR is a local driver of vehicular emissions as an employer and tourist destination for thousands of people each year. Vehicular emissions were calculated based on the visitor origin data, lodging occupancy and location, transit ridership, and estimated average vehicle occupancy (2.5 guests/vehicle) documented in the **Traffic and Parking Technical Report**. With this data, it was estimated that the average winter visitor travels over 60 miles per ski day.¹⁶¹ The average summer visitor travels almost 80 miles per day.¹⁶² Emissions were calculated for vehicle miles driven on the average day across the season; resulting vehicle emissions would likely be higher on busier days and lesser on lower visitation days. Transit/bus miles associated with the Teton Valley Bus service, employees driving to the resort each day, and visitor travel within the region were included in seasonal emission totals as well.

Estimated vehicle emissions as a result of existing visitor trips to GTR in the winter, summer, and due to construction of projects on NFS lands are estimated in **Table 3.10-4**.

Table 3.10-4. Existing Traffic and Construction Vehicle Emissions

Pollutant	Existing Conditions (lbs/day)		
	Winter	Summer	Construction
CO	338.23	135.87	0
NO _x	36.84	16.36	0
SO _x	0.93	0.38	0
PM 2.5	5.66	2.33	0
CO ₂	9.63E+04	3.91E+04	0
CH ₄	3.50	1.41	0

¹⁵⁹ Fall River Rural Electric Cooperative 2022

¹⁶⁰ Personal correspondence with Fall River, 01/05/2022

¹⁶¹ For example, if a group of 3 travels the 400 miles round trip from Bozeman, stays at the resort, takes one trip into Driggs for dinner (25 miles round trip), and skis for 2 days, this would be $(400+25) \div 3 \div 2 = 71$ vehicle miles per skier visit. A group of two taking a day trip from Jackson (90 miles round trip), would be 45 vehicle miles per skier visit.

¹⁶² A lower percentage of summer visits are from residents from the immediate area.

Source: Air Quality Technical Report

As shown in **Table 3.10-4**, the pollutants measurably impacted by daily visitor vehicle emissions at GTR are NO_x (including NO and NO₂), CO, and CO₂. Vehicle emissions have the largest impact on CO₂, at an estimated 108,300 lbs (49 tons) per day in the winter and 39,100 lbs (18 tons) per day in the summer. On an annual basis, these emissions are approximately 0.2 percent of all relevant emissions in the transportation sector in Wyoming. Additionally, existing vehicle emissions of NAAQS (NO_x, CO, PM_{2.5}, and SO_x) as a result of GTR operations contribute to 0.2 percent or less of highway vehicle emissions in the State of Wyoming on an annual basis.

In the existing conditions at GTR, there are no existing construction projects, therefore there are no existing air quality impacts from construction vehicles.

COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

As described previously, State of Wyoming guidance defines stationary sources, secondary sources, and significant emissions. According to state standards and regulations, GTR would not be considered a stationary source because it does not produce emissions directly from its operations. Additionally, emissions generated as a result of operations, such as vehicle traffic, would not be considered a secondary source according to State standards and regulations because it excludes “any emissions which come directly from a mobile source.” While these standards and regulations do not directly apply to GTR and its operations, this analysis uses this definition as a tool for scaling emissions impacts.

In its existing condition, GTR annual operations, including summer and winter seasons, would not be considered “significant” by Wyoming standards and guidelines. Refer to the **Air Quality Technical Report** for more information.

3.10.4 Direct and Indirect Environmental Consequences

The following sections present the direct and indirect environmental consequences anticipated under the No Action Alternative and all action alternatives.

There are six pollutants analyzed in this section, four of which are pollutants subject to NAAQS: CO, NO_x, SO_x, and PM_{2.5}, and the other two of which are characterized as relevant emissions, CO₂ and CH₄. This section estimates pollutant emissions as a result of proposed projects and compares them to existing pollutant emissions as a result of highway and off-highway vehicles (which are the primary drivers of emissions as a result of proposed projects) in the State of Wyoming and Teton County, Wyoming in order to quantify the project impacts. Additionally, this section uses existing concentrations compared to NAAQS as described in **Section 3.10.3** in a qualitative analysis to determine the impacts of the proposed projects and whether or not they could contribute to concentrations above NAAQS standards.

For all alternatives, the primary source of additional pollutant emissions is visitor vehicle traffic. It is important to recognize that many of the additional visitors to GTR contributing air pollution are recreationists seeking the recreational experience in general. While they may choose to come to GTR over other resorts as a result of the proposed projects in each alternative, they may have traveled to another nearby resort whether or not the projects were implemented and may have still contributed to pollutant emissions. Therefore, estimated increases in pollutants as a result of visitor vehicle traffic is most likely a high-end estimate of air quality impacts from each alternative.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, GTR resources would remain in their existing conditions and the ski area would continue to operate within the existing SUP area, utilizing existing terrain and lifts. Average daily visitation in both winter and summer is expected to increase modestly in line with the current trend.

Impacts from Construction and Timber Removal

Without the construction of proposed projects, heavy machinery and additional construction vehicles would not be used at GTR and would not generate emissions contributing to air quality under the No Action alternative. In continuing operations, GTR may require occasional maintenance vehicle trips on their existing infrastructure, which could require the use of heavy-duty construction vehicles. However, these impacts would be temporary and are likely to have little impact on air quality in the region.

Impacts from Operation

The contribution of activities at the ski area, such as visitor traffic/emissions, to air quality would continue along current trends. Summer and winter visitation is expected to increase in coming years, resulting in very small increases in CO, NO_x, and SO_x emissions from vehicles (refer to the **Air Quality Technical Report**). Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away. Total vehicle miles on an average winter day under the No Action Alternative would increase by approximately 16,000 from the existing condition; on an average summer day, vehicle miles traveled would increase by approximately 7,000 from the existing condition. These emissions would contribute to an increase of less than 0.1 percent of highway vehicle emissions in Wyoming and are not likely to produce emissions that would increase concentrations above NAAQS.

The largest increase would be in CO₂ emissions, with a total annual difference from existing conditions of approximately 18,300 lbs (8 tons) per day in the winter and 7,800 lbs (3.5 tons) per day in the summer (following current trend of growing visitation). On an annual basis, increased visitation would only contribute to less than a 0.1 percent increase in CO₂ and CH₄ emissions in the transportation sector in Wyoming, which is expected to result in negligible impacts to air quality.

Additionally, GTR operations would continue to have negligible impacts on emissions as its power source is primarily renewables that do not result in the emission of pollutants (for more information, refer to the Emissions from Ski Area Operations section in **Section 3.10.3**).

Compliance with Federal, State, and Local Regulations

As described in **Section 3.10.3**, State of Wyoming guidelines do not consider emissions generated as a result of operations, such as vehicle traffic, a secondary source; however, this analysis assesses GTR emissions under the definition of a “significant” secondary source per state guidelines as a tool for scaling impacts. Annual emissions under the No Action Alternative, assuming a 145-day winter season and an 80-day summer season, would not be considered “significant” by Wyoming standards (refer to the **Air Quality Technical Report**).

ALTERNATIVE 2 – PROPOSED ACTION

The Proposed Action is consistent with federal, state, and local regulations regarding air quality. Three categories of activities would contribute to increased emissions from the proposed projects: (1) emissions from construction of the projects; (2) emissions from additional winter visitation and operation of

proposed infrastructure; (3) emissions from additional summer visitation, driven by proposed multi-season projects.

Impacts from Construction and Timber Removal

Two types of construction activities would generate pollutant emissions as a result of the Proposed Action: on-road and off-road vehicles. The Proposed Action would require trucks and other heavy equipment on mountain access roads for tree removal, construction, staging, and installation of proposed infrastructure, which would result in up to 5 passenger vehicle trips and 5 logging vehicle trips per day for the duration of construction activities. Additionally, off-road activities such as tree removal, rock clearing, soil removal and placement, vegetation clearing on the proposed new ski terrain, ski terrain access improvements, and mountain biking trails would also require use of heavy equipment. The Proposed Action would result in up to 5 off-road vehicles used for 8 hours per day of an approximately 3.5-month construction season. The use of these off-road machines such as spider hoes and chipping equipment would result in pollutant emissions during the summer construction seasons. When helicopters would be employed for aerial tree removal or lift tower placement, they would consume fuel and contribute to pollutant emissions as well. Helicopters would be used for less than 5 days each construction season and as a result would contribute to a fraction of construction emissions; therefore, they are not included in the off-road construction vehicle emissions calculations.

Combined impacts from on-road and off-road construction activity would result in temporary impacts to air quality. Of the NAAQS pollutants, SO_x and $\text{PM}_{2.5}$ are not likely to be considerably impacted by construction activities. However, small amounts of CO and NO_x (approximately 22 and 14 lbs per day, respectively) may be released daily into the atmosphere as a result of construction vehicle activity. Emissions of each NAAQS pollutant would contribute to an increase of less than 0.1 percent or less of off-highway vehicle emissions in Wyoming on an annual basis. When considering the recent trends for CO and NO_x in the region, existing CO and NO_x concentrations are far below NAAQS, and these additional contributions are not likely to considerably increase pollutant concentrations and are especially not expected to result in pollutant levels above the NAAQS.

When looking at impacts to CO_2 and CH_4 , there would be little to no difference in CH_4 emissions as a result of construction from the Proposed Action, however, CO_2 emissions as a result of construction would increase by approximately 5,460 lbs (2.5 tons) daily. An additional 5,460 lbs of CO_2 daily would contribute to an 0.1 or less percent increase in total transportation emissions in Wyoming, which is not expected to contribute to the degradation of air quality in the state or area. Therefore, the impacts of construction as a result of the Proposed Action on these emissions would be negligible.

In gladed ski areas that require tree removal, trees would either be removed over the snow and using mountain road networks or hand cut, piled, and burned. In case of burning, vegetation and felled trees would be burned on site, adhering to State of Wyoming Burn Permit parameters and CTNF for pile size and the timing of burning. Burning would result in the short-term release of pollutant emissions, limited to the duration of the burn itself. Compliance with CTNF and state regulations on this activity would mitigate impacts on air quality. Because of harsh wildfire conditions and fire bans, burning may not be an option during construction of these projects. Additionally, due to the small area of tree removal projects that are anticipated to require burning, possible use of pile burning during the construction phase of the proposed projects is unlikely to result in regional or Class I or II areas air quality degradation.

Impacts from Operation

Future changes in recreational use in the winter and summer seasons would result in possible air quality impacts. Vehicular traffic due to an increase in visitation would result in possible impacts on air quality in the region. The Proposed Action is estimated to generate approximately an additional 800 visitors on average per day during the winter season and an additional 450 on average during the summer season, when compared to the existing condition. Average vehicle miles per skier visit is anticipated to increase slightly to reflect more visitors coming from further away. Total vehicle miles on an average winter day would increase by approximately 59,000 from the existing condition; on an average summer day, vehicle miles traveled would increase by approximately 34,000 from the existing condition. Total vehicle miles include the commutes of additional employees that would be hired by GTR under the Proposed Action.

With increased winter visitation and vehicle miles, of the NAAQS pollutants, CO and NO_x emissions would increase by approximately 236 and 25 lbs per day, compared to the existing condition. PM 2.5 would increase approximately 4 lbs and SO_x would increase less than 1 lb. These emissions would contribute to an increase of less than 0.2 percent of highway vehicle emissions in Wyoming on an annual basis and compared to the existing condition. As described in **Section 3.10.3**, NO_x, CO, and SO_x have remained well below NAAQS for several years, and so has PM2.5 except for major spikes likely caused by major events such as wildfires. When comparing the proposed increases to existing conditions, it is unlikely that these small increases in emissions would cause pollutant concentrations to surpass the NAAQS.

CH₄ concentrations are expected to slightly increase by approximately 2.4 lbs per day in the winter as a result of GTR's operations under the Proposed Action, compared to the existing condition. Additionally, winter activity under the Proposed Action is expected to produce an additional approximately 67,000 lbs (30 tons) of CO₂ daily. This is less than a 0.2 percent increase in daily CO₂ emissions from the transportation sector in Wyoming on an annual basis. These emissions as a result of the Proposed Action may contribute slightly to increases in CO₂ and CH₄ in the atmosphere; however, the scale of the projects and their impacts on emissions are not large enough to negatively impact air quality in the area.

New ski area infrastructure, including chairlifts, would require additional power and maintenance, however, as GTR's power source is primarily renewables that do not result in the emission of pollutants (as described in **Section 3.10.3**), this is not expected to generate substantial additional pollutant emissions and is expected to have negligible impacts on air quality.

Compliance with Federal, State, and Local Regulations

As described previously, in the case of burning timber during construction of proposed projects, burn activity would adhere to State of Wyoming Burn Permit parameters and CTNF for pile size and the timing of burning.

As described in **Section 3.10.3**, State of Wyoming guidelines do not consider emissions generated as a result of operations, such as vehicle traffic, a secondary source; however, this analysis assesses GTR emissions under the definition of a "significant" secondary source per state guidelines as a tool for scaling impacts. Annual emissions under the Proposed Action, assuming a 145-day winter season and an 80-day summer season, would not be considered "significant" by Wyoming standards (refer to the **Air Quality Technical Report**).

ALTERNATIVE 3 – NO SUP EXPANSION

Alternative 3 includes all projects in the Proposed Action that would occur within the existing GTR SUP area. There would be similar impacts as the Proposed Action, however, without the construction of South Bowl and Mono Trees areas, construction impacts and increases in winter visitation would be smaller. Summer visitation is expected to increase by the same amount as under the Proposed Action.

Impacts from Construction and Timber Removal

Alternative 3 would require trucks and other heavy equipment for tree removal, construction, staging, and installation of proposed infrastructure, which would result in an estimated 3 passenger vehicle trips and 3 logging vehicle trips per day for the duration of construction activities as well as approximately 3 off-road vehicles such as excavators or spider hoes used for 8 hours per day. Construction-associated vehicle trips combined with off-road vehicle use described under Alternative 3 would result in a difference of approximately 3,280 lbs (1.5 tons) of CO₂ per day plus negligible changes (<1 lb) in SO_x, PM_{2.5}, and CH₄ and small amounts of CO and NO_x emissions (approximately 13 and 8 lbs, respectively). The increase in CO₂ emissions would contribute to less than an 0.1 percent increase to annual CO₂ emissions in the transportation sector in Wyoming, resulting in negligible changes. Emissions of each NAAQS pollutant would contribute to an increase of less than 0.1 percent of off-highway vehicle emissions in Wyoming. Similar to the discussion in the Proposed Action, when considering the recent trends for NAAQS in the region, these additional contributions are not likely to considerably increase pollutant concentrations and are especially not expected to result in pollutant levels above the NAAQS. Helicopter use, if needed for tree removal or lift tower placement, may also be required under this alternative. Refer to the Proposed Action analysis for a discussion of the impacts of helicopter use.

Additionally, burning may be required to create proposed gladed areas where over-the-snow removal methods are not possible. Burning would have short-term impacts on air quality in the vicinity of GTR but are not expected to have measurable long-term impacts on regional air quality or Class I or II areas. For more information on burning refer to the explanation of construction impacts under the Proposed Action.

Impacts from Operation

With the projects proposed under Alternative 3 and the continuing trend of increasing visitation, it is anticipated that winter visitation would increase by approximately 380 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition. Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away. Total vehicle miles on an average winter day under Alternative 3 would increase by approximately 27,000 from the existing condition; average summer day miles are estimated to be approximately the same as the Proposed Action. This increase in visitation and vehicle miles would result in increases in vehicular emissions, however, to a lesser degree than the increases in emissions under the Proposed Action. When compared to the Proposed Action, Alternative 3 would have less of an impact on air quality from GTR operations by creating less additional traffic without the SUP expansion and associated projects. Specifically, NAAQS pollutants are not expected to surpass NAAQS given their current concentrations and the increases in CO, NO_x, SO_x, and PM_{2.5} anticipated from Alternative 3. Compared to the existing condition, these emissions would contribute to an increase of 0.1 percent or less of highway vehicle emissions in Wyoming on an annual basis (refer to the **Air Quality Technical Report**). While there would be little to no impact to CH₄ concentrations, CO₂ emissions would increase in both the winter and summer seasons,

with higher daily emissions in the winter at an increase of approximately 31,400 lbs (14 tons) per day compared to the existing condition. This would cause less than a 0.1 percent increase in Wyoming's average CO₂ emissions in the transportation sector on an annual basis compared to the existing condition, resulting in negligible impacts to air quality.

Compliance with Federal, State, and Local Regulations

As described above, in the case of burning timber during construction of proposed projects, burn activity would adhere to State of Wyoming Burn Permit parameters and CTNF for pile size and the timing of burning.

As described in **Section 3.10.3**, State of Wyoming guidelines do not consider emissions generated as a result of operations, such as vehicle traffic, a secondary source; however, this analysis assesses GTR emissions under the definition of a “significant” secondary source per state guidelines as a tool for scaling impacts. Annual emissions under Alternative 3, assuming a 145-day winter season and an 80-day summer season, would not be considered “significant” by Wyoming standards (refer to the **Air Quality Technical Report**).

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Alternative 4 includes all projects in the Proposed Action that would occur within the SUP area as well as the proposed projects in South Bowl. There would be similar impacts as the Proposed Action however, without the construction of the Mono Trees areas, construction impacts would be less substantial and winter visitation is not projected to increase as much as under the Proposed Action. The summer projects included under this alternative are the same as under the Proposed Action and projected increases to summer visitation are the same.

Impacts from Construction and Timber Removal

Alternative 4 would require trucks and other heavy equipment for tree removal, construction, staging, and installation of proposed infrastructure, which would result in an estimated 4 passenger vehicle trips and 4 logging vehicle trips per day for the duration of construction activities. Alternative 4 would also result in approximately 4 off-road vehicles such as excavators or spider hoes used for 8 hours per day to complete the proposed projects. Vehicle trips combined with off-road vehicle use to construct the South Bowl area would result in a difference from the existing condition of approximately 4,370 lbs (2 tons) of CO₂ per day plus small amounts (approximately 17 and 11 lbs, respectively) of CO and NO_x and negligible changes (<0.5 lb) to SO_x, PM_{2.5}, and CH₄ emissions on a daily basis. An additional 2 tons per day of CO₂ would result in less than a 0.1 percent increase in Wyoming's transportation sector emissions on an annual basis, and this change is not expected to measurably impact air quality in the region. Emissions of each NAAQS pollutant would contribute to an increase of less than 0.1 percent of off-highway vehicle emissions in Wyoming. Similar to the discussion in the Proposed Action, when considering the recent trends for NAAQS in the region, these additional contributions are not likely to considerably increase pollutant concentrations and are especially not expected to result in pollutant levels above the NAAQS. Helicopter use, if needed for tree removal or lift tower placement, may also be required under this alternative. Refer to the Proposed Action analysis for a discussion of the impacts of helicopter use.

Additionally, burning may be required to create proposed gladed areas where over-the-snow removal methods are not possible. Burning would have short-term impacts on air quality in the vicinity of GTR but are not expected to have measurable long-term impacts on regional air quality or Class I or II areas.

For more information on burning refer to the explanation of construction impacts under the Proposed Action.

Impacts from Operation

With the projects proposed under Alternative 4 and the continuing trend of increasing visitation, it is anticipated that winter visitation would increase by approximately 600 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition. Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away. Total vehicle miles on an average winter day under Alternative 4 would increase by approximately 45,000 from the existing condition; average summer day miles are estimated to be approximately the same as the Proposed Action. This increase in visitation and vehicle miles would result in increases in vehicular emissions, however, to a lesser degree than the increases in emissions under the Proposed Action. When compared to the Proposed Action, Alternative 4 would have less of an impact on air quality from GTR operations by creating less additional winter traffic compared to existing conditions without the SUP expansion into Mono Trees and associated projects. To note, summer visitor vehicular traffic is projected to increase by the same amount as under the Proposed Action.

Estimated emissions for CO, NO_x, SO_x, and PM_{2.5} under Alternative 4 are not expected to surpass NAAQS. These emissions would contribute to an increase of approximately 0.1 percent or less of highway vehicle emissions in Wyoming compared to the existing condition and on an annual basis. Daily CO₂ emissions are expected to increase by approximately 51,300 lbs (23 tons) per day in the winter and approximately 38,000 lbs (17 tons) per day in the summer. These emissions would contribute to an approximately 0.1 percent increase in annual Wyoming transportation sector CO₂ emissions and are not expected to have measurable impacts on air quality.

Compliance with Federal, State, and Local Regulations

As described previously, in the case of burning timber during construction of proposed projects, burn activity would adhere to State of Wyoming Burn Permit parameters and CTNF for pile size and the timing of burning.

As described in **Section 3.10.3**, State of Wyoming guidelines do not consider emissions generated as a result of operations, such as vehicle traffic, a secondary source; however, this analysis assesses GTR emissions under the definition of a “significant” secondary source per state guidelines as a tool for scaling impacts. Annual emissions under Alternative 4, assuming a 145-day winter season and an 80-day summer season, would not be considered “significant” by Wyoming standards (refer to the **Air Quality Technical Report**).

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Alternative 5 includes all projects in the Proposed Action that would occur within the SUP area as well as the proposed projects in Mono Trees. There would be similar impacts as Proposed Action, however, without the construction of South Bowl, construction impacts would be less substantial.

Impacts from Construction and Timber Removal

Alternative 5 would require trucks and other heavy equipment for tree removal, construction, staging, and installation of proposed infrastructure, which would result in an estimated 4 passenger vehicle trips and 4

logging vehicle trips per day for the duration of construction activities. Alternative 5 would also result in approximately 4 off-road vehicles such as excavators or spider hoes used for 8 hours per day to complete the proposed projects. Vehicle trips combined with off-road vehicle use would result in a daily difference of approximately 4,370 lbs (2 tons) of CO₂ per day plus small amounts (approximately 17 and 11 lbs, respectively) of CO and NO_x and negligible changes (<0.5 lb) to SO_x, PM_{2.5}, and CH₄ emissions. Specifically, the increases in daily CO and NO_x emissions as a result of the construction of projects in Alternative 5 are not expected to measurably contribute to pollutant contributions or surpass NAAQS for the pollutants. Similar to Alternative 4, an additional 541 lbs per day of CO₂ as a result of construction would contribute to less than a 0.1 percent increase in daily Wyoming transportation emissions, resulting in negligible impacts to air quality. Emissions of each NAAQS pollutant would contribute to an increase of less than 0.1 percent of off-highway vehicle emissions in Wyoming on an annual basis and compared to existing condition. Similar to the discussion in the Proposed Action, when considering the recent trends for NAAQS in the region, these additional contributions are not likely to considerably increase pollutant concentrations and are especially not expected to result in pollutant levels above the NAAQS. Helicopter use, if needed for tree removal or lift tower placement, may also be required under this alternative. Refer to the Proposed Action analysis for a discussion of the impacts of helicopter use.

Additionally, burning may be required to create proposed gladed areas where over-the-snow removal methods are not possible. Burning would have short-term impacts on air quality in the vicinity of GTR but are not expected to have measurable long-term impacts on regional air quality or Class I or II areas. For more information on burning refer to the explanation of construction impacts under the Proposed Action.

Impacts from Operation

With the projects proposed under Alternative 5 and the continuing trend of increasing visitation, it is anticipated that winter visitation would increase by approximately 550 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition. Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away. Total vehicle miles on an average winter day under Alternative 5 would increase by approximately 41,000 from the existing condition; average summer day miles are estimated to be approximately the same as the Proposed Action. This increase in visitation and vehicle miles would result in increases in vehicular emissions, however, to a lesser degree than the increases in emissions under the Proposed Action. Specifically, the small increases in NAAQS pollutants (CO and NO_x) are not anticipated to contribute to pollutant concentrations that surpass NAAQS. These emissions would contribute to an increase of approximately 0.1 percent or less of highway vehicle emissions in Wyoming on an annual basis and compared to the existing condition. Daily CO₂ emissions are expected to increase by 47,200 lbs (21 tons) per day in the winter and 38,000 lbs (17 tons) per day in the summer. On an annual basis, the increase in CO₂ emissions would contribute to an approximately 0.1 percent increase in Wyoming transportation sector CO₂ emissions, compared to the existing conditions. This is not expected to have measurable impacts on air quality.

Compliance with Federal, State, and Local Regulations

As described previously, in the case of burning timber during construction of proposed projects, burn activity would adhere to State of Wyoming Burn Permit parameters and CTNF for pile size and the timing of burning.

As described in **Section 3.10.3**, State of Wyoming guidelines do not consider emissions generated as a result of operations, such as vehicle traffic, a secondary source; however, this analysis assesses GTR emissions under the definition of a “significant” secondary source per state guidelines as a tool for scaling impacts. Annual emissions under Alternative 5, assuming a 145-day winter season and an 80-day summer season, would not be considered “significant” by Wyoming standards (refer to the **Air Quality Technical Report**).

3.10.5 Cumulative Effects

SCOPE OF THE ANALYSIS

The effects analyzed in this discussion apply to both the Proposed Action and the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on air quality in the airshed of the CTNF and of Teton County, Wyoming and Idaho.

Temporal Bounds

The temporal bounds for this cumulative effects analysis of air quality extend from 1969 when GTR first opened as a ski area through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis of air quality includes the airshed of the CTNF and of Teton County, Wyoming because these are the airsheds in closest proximity and influences by the project.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects project area, the reader is referred to **Appendix A** in the EIS document. Past ski area and regional development projects have been incorporated and analyzed in this document as part of the Affected Environment. Projects that could have both beneficial and adverse cumulative impacts on air quality are analyzed in the following discussion.

Projects such as the South Valley and Teton Canyon Hazardous Fuels Reduction and Red Creek Caribou Prescribed Fire projects that involve burning would likely be visible from GTR and would have temporary impacts to air quality in the region through the release of PM_{2.5} and ozone into the atmosphere. However, the goal of these projects is to reduce the severity of impacts from large wildfires in the future that could have serious impacts on air quality. Therefore, while burning during these projects may result in temporary impacts to air quality in the region, they would have positive long-term impacts on air quality and other resources by reducing the severity of impacts from large wildfire events that contribute to high pollutant concentrations.

Projects in the 2018 MDP, including those that are not included in the Proposed Action, are also included in this analysis. As these projects are accepted in the 2018 MDP but not approved under environmental review, they are considered here as reasonably foreseeable future projects. Included in the 2018 MDP but not in the Proposed Action are various lift upgrades and installments, additional guest services and ski area operations facilities, and additional snowmaking. Additionally, the PUD-PR was approved in 2019 and included private lands projects in the resort’s base area (refer to **Section 3.4 – Socioeconomics** for more information). Approved but unimplemented projects from the First Amended Master Plan include

construction of 450 residential and lodging units and 150,000 square feet of commercial and resort services.

On-mountain development and base area development combined are expected to make GTR more appealing as a destination resort. It is anticipated that if these projects are constructed, a higher percentage of guests would be able to stay at the resort and daily vehicle trips to the mountain would be reduced. This has the potential to reduce daily vehicle mileage and emissions, thus reducing the pollutant emissions as a result of visitation. Base area development has the potential to reduce day traffic and daily emissions and is favorable when considering impacts to air quality.

3.10.6 Irreversible and Irretrievable Commitments of Resources

The addition of new trails, snowmaking capability, and infrastructure at GTR represent irretrievable contributions to air quality, because the emissions that would be generated from the construction of the proposed projects and increased visitation cannot be retrieved. However, these emissions are not considered irreversible due to offsetting and mitigation that could possibly occur in the future. These offsetting and mitigation measures include consideration of the loss of carbon sequestration capacity resulting from vegetation removal, which could be reversed in the long-term if vegetation were allowed to regrow. Additionally, measures could be put into place to reduce vehicular and construction emissions that might impact air quality and visibility.

3.11 Climate Change

3.11.1 Scope of the Analysis

Extensive comments related to climate change were received during the scoping comment period. This analysis responds to those comments and as such is intended to assess (1) the effect of proposed projects at GTR on climate change in the region; and (2) the effects climate change would have on the proposed projects and future operations at GTR.

The spatial scope of this analysis is the mountainous regions of Teton County, Wyoming and adjacent areas in the northern Rocky Mountains of Wyoming with similar climate, ecology, wildlife, and plant species. This region is expected to experience similar effects from climate change, and represents the range of what may occur at GTR. The temporal scope of this analysis spans from the ski area's inception in 1969 through 2100, the date climate change literature uses as a benchmark in discussion of climate change effects.¹⁶³

Climate change may affect resources such as watershed resources and wildlife, and/or actions that affect these resources may in turn affect the climate. These considerations are discussed in the following resource specific sections in **Section 3.1**, **Section 3.10**, **Section 3.12**, **Section 3.13**, **Section 3.14**, **Section 3.15**, and **Section 3.16**.

3.11.2 State and Local Policy and Guidance

There are no specific state or local policies or guidance related to climate change. However, there have been various studies done within the region to understand the impacts of climate change. One specific

¹⁶³ USGCRP. 2018

study was conducted on the Greater Yellowstone Area (GYA). This assessment presents an in-depth summary of past, historical, and projected future changes to the climate of the GYA. This includes looking at changes in temperature, precipitation, and water. The intentions of this assessment are to provide a foundation for future climate research, along with discussing impacts, adaptations, and mitigation strategies for the GYA. The assessment determined that there is a projected 5.3°F warming by the year 2100 in the GYA. Similarly, there would be a 9 percent increase in precipitation, a 40 percent loss in snowpack, and 35 percent less runoff from June-August.¹⁶⁴

3.11.3 Affected Environment

CURRENT CLIMATE OVERVIEW

The climate of Wyoming is characterized by frequent sunshine, low humidity, and large temperature variations. Since the National Weather Service doesn't have a Cooperative Observer Program (COOP) site at GTR, this analysis has been based on a COOP site from the Town of Alta, Wyoming, located 7.8 miles southwest of GTR. The Town of Alta, Wyoming, located at an elevation of 6,440 feet above mean sea level, receives an average of 22.7 inches of precipitation per year, along with 110.6 inches of snowfall per year. The average winter temperature is about 13°F and the average summer temperature is about 75°F.¹⁶⁵ However, sitting at a slightly higher elevation, GTR is generally cooler on average and receives substantially greater annual snowfall.

FUTURE CLIMATE PROJECTIONS

Climate Change Projections

The climate information that is presented in this assessment is applicable to current management and all action alternatives. The basis for this analysis relies on the report *Climate Change Vulnerability and Adaptation in the Intermountain Region* (2018 CCVA). This report of best available science provides a guidance document for land managers and partners. To understand how the climate, biogeography, natural resource conditions, and management issues influence potential climate change effects and adaptation strategies, the intermountain region was divided into six subregions. The GTR project area is located within the Southern Greater Yellowstone subregion. This report uses two representative concentration pathway (RCP) scenarios.¹⁶⁶ These RCPs are emission concentrations defined and used by the Intergovernmental Panel on Climate Change (for quantitative analysis of emissions refer to **Section 3.10**). Therefore, this analysis uses RCP 4.5 and RCP 8.5.

There are four RCPs: 2.6, 4.5, 6.0, and 8.5. The number represents the projected radiative forcing, with 2.6 being the least amount of radiative forcing and 8.5 being the highest. Radiative forcing is a measure of the effect emissions and other aerosols have on trapping heat (i.e., with higher concentration levels of emissions there is going to be a higher radiative forcing and thus more heat trapped).¹⁶⁷ Hausfather further describes the characteristics of the RCP pathways as:¹⁶⁸

- RCP 4.5

¹⁶⁴ Hostetler et al. 2021

¹⁶⁵ Western Regional Climate Center 2010

¹⁶⁶ Halofsky et al. 2018

¹⁶⁷ Hausfather 2019

¹⁶⁸ Ibid

- ◆ “Lower emissions”
 - ◆ Emissions peak in 2040 then decline
 - ◆ Requires CO₂ emissions to decline by 2045
 - ◆ Requires CH₄ to stop increasing by 2050 and decline to about 75 percent of the levels in 2040
 - ◆ Requires SO₂ emissions to decline to approximately 20 percent of those of 1980-1990
 - ◆ Results in global temp rise between 3.6°F with sea level rise 35 percent higher than RCP 2.6
- RCP 8.5
 - ◆ “Higher emissions”
 - ◆ Relatively unlikely (assumes historical trends continue without future reductions in emissions)
 - ◆ Useful in tracking historical total cumulative CO₂ emissions
 - ◆ Useful in predicting mid-century and earlier emissions based on current policies

Within the 2018 CCVA report, climate is projected to the year 2100. Under RCP 4.5 it was determined that for the Southern Greater Yellowstone region, the median maximum temperature is projected to rise about 5°F and the median minimum temperature is projected to rise about 6°F. Whereas under RCP 8.5, the median maximum temperature is expected to rise about 11°F and the median minimum temperature is expected to rise about 12°F by 2100. Furthermore, under RCP 8.5, the median minimum temperature is projected to rise to just under freezing by 2100, whereas under RCP 4.5 it would remain below freezing. Although there are definite changes in temperature projected, precipitation is expected to be more variable with no definite trend, “Annual precipitation projections are highly variable with no discernable trend under RCP 4.5 and a slight increasing trend under RCP 8.5.”¹⁶⁹

Seasonal temperatures are expected to increase as well. Winter temperatures are expected to rise 3°F, with all other seasons rising about 5°F under RCP 4.5. Under RCP 8.5, winter, spring, and fall temperatures are expected to rise about 10°F, where summer temperatures are expected to rise by more than 12°F by the end of the 21st century. Along with this, median minimum spring and fall temperatures are expected to increase, such that some projections rise above freezing by 2100 under RCP 8.5.

Climate Trends

Recently there have been increases in severe hot weather events, decreases in frost days, and increases in heavy precipitation over much of North America. Anthropogenic processes have contributed to these events increasing the likelihood of earlier peak flow of snowmelt runoff and declines in the amount of water stored in spring snowpack in snow-dominated streams and areas of the western United States and Canada (refer to **Section 3.10** for more information). With the steady contribution of emissions from anthropogenic processes warming of 3.6°F is very likely. This would eventually lead to more extreme heat events and daily precipitation extremes, along with more low-snow years and earlier snowmelt runoff in the western United States and Canada.¹⁷⁰ Furthermore, temperatures in Teton County, Wyoming

¹⁶⁹ Halofsky et al. 2018

¹⁷⁰ Romero-Lankao et al. 2015

have risen by 1.1°F since 1900. This has serious implications for precipitation falling as snow, lower summer stream flows, and drier forests that are more prone to forest fires.¹⁷¹

Temperature

One of the main effects of climate change across the continental United States (CONUS) is an increase in temperature overall. This is due to the continued warming of the atmosphere resulting from the greenhouse effect. As more CO₂, CH₄, SO₂ are inputted into the atmosphere, the Earth warms. As the Earth warms, more emissions are released, creating a positive feedback loop and thus further warming (refer to **Section 3.10** for more information on this process).

As with most other locations in the CONUS, GTR is projected to have an increase in winter temperatures over the next century. Warmer winter temperatures are expected to shift the rain-snow transition zone. This zone is where precipitation is more likely to be snow rather than rain for a specific time of year. This zone is expected to move higher in elevation as temperatures increase, due to climate change. Although this may only affect lower elevation areas in terms of downhill skiing quality, higher elevation areas become more vulnerable to climate-related disturbance, like insect outbreaks and fire, which can pose challenges for resort and Forest management. Furthermore, as with winter temperatures, summer temperatures at GTR are projected to increase.¹⁷²

Overall, average daily minimum temperature is expected to increase over time within the project area (refer to **Exhibit 3.11-1**). Along with this, average daily maximum temperature is expected to increase as well by the year 2100 (refer to **Exhibit 3.11-2**).¹⁷³

¹⁷¹ Ringos and Newcomb 2014

¹⁷² Halofsky et al. 2018

¹⁷³ USDA Forest Service 2018a

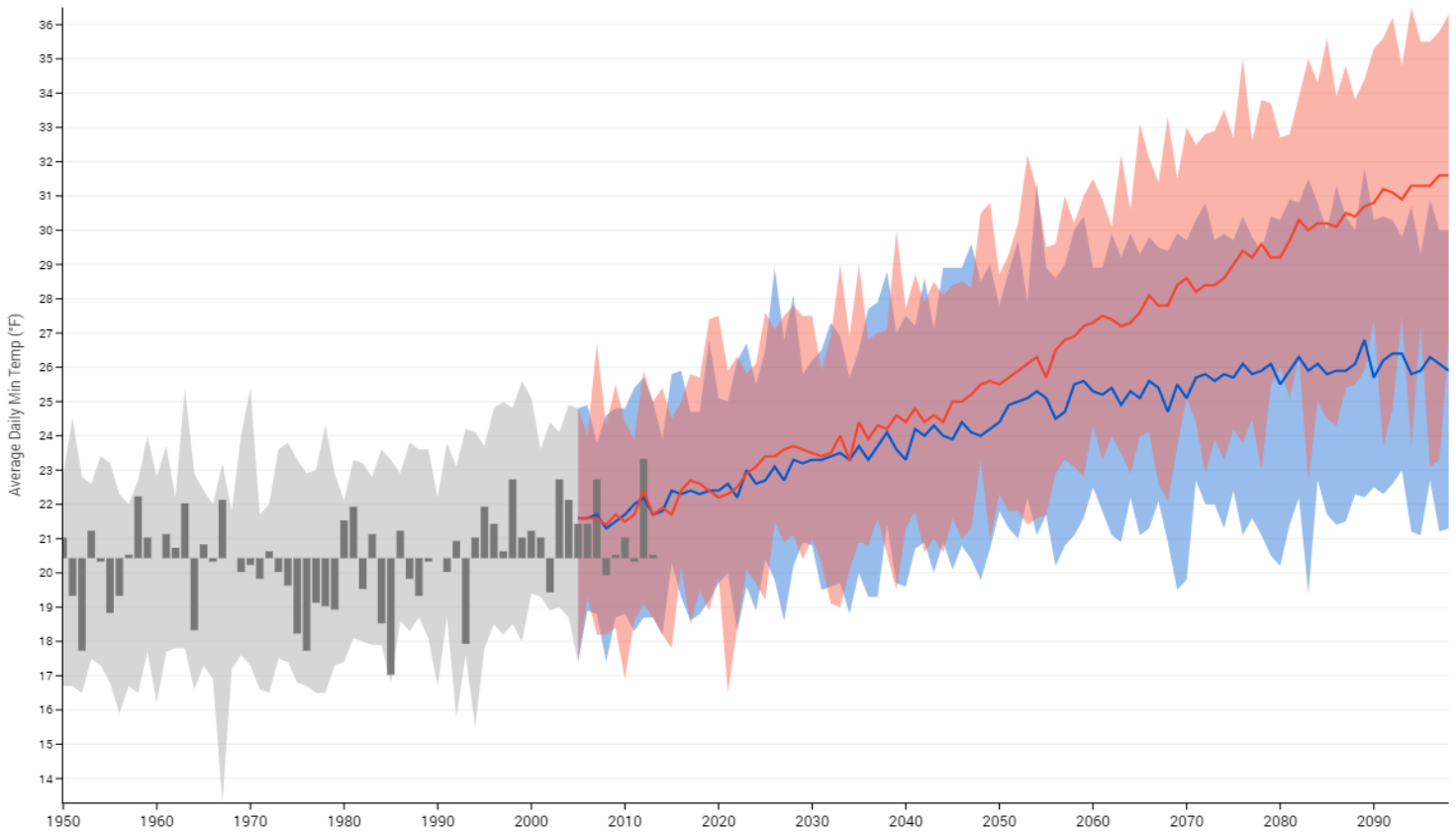


Exhibit 3.11-1: Graph of average daily minimum temperature until the year 2100. The light grey represents modeled history, the dark grey represents observed history, with the red coloration being RCP 8.5 and the blue coloration being RCP 4.5. Average daily minimum temperature is expected to increase over time.¹⁷⁴

¹⁷⁴ USDA Forest Service 2018a

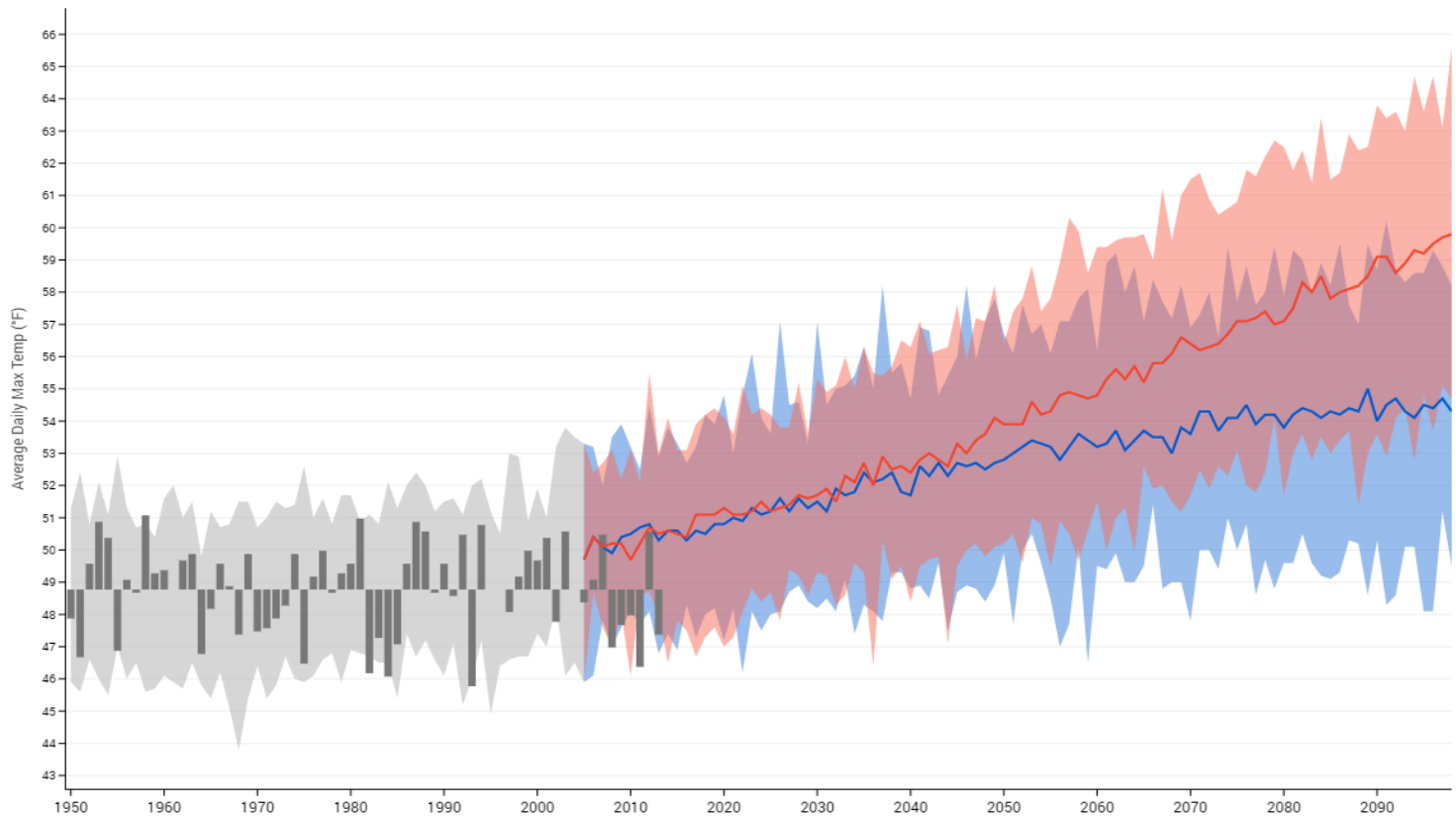


Exhibit 3.11-2: Graph of the average daily maximum temperature until the year 2100. The light grey represents modeled history, the dark grey represents observed history, with the red coloration being RCP 8.5 and the blue coloration being RCP 4.5. Average daily maximum temperature is expected to increase over time.¹⁷⁵

¹⁷⁵ USDA Forest Service 2018b

Precipitation

Climate change projection models have shown that GTR would have an increase in precipitation as climate change progresses. However, winter snowfall would shift to rain as increases in temperatures continue. The areas that have historically been snow-dominated would become rain-dominated going into the future.¹⁷⁶ With this overall increase in temperature, and shift in type of precipitation, snow seasons that have historically been five months (November-March) would become three months (December-February). However, due to its prime elevation, GTR has experienced an average total of 364 inches of snow over the past ten seasons.¹⁷⁷ Although there has been consistent snow over the past ten seasons, as stated, precipitation that currently falls as snow is expected to fall as rain. Overall, however, total precipitation is not expected to differ that much. This is supported by **Exhibit 3.11-3** below. Total annual precipitation is modeled to not present a definite change in trend, but rather just be variable from year to year.

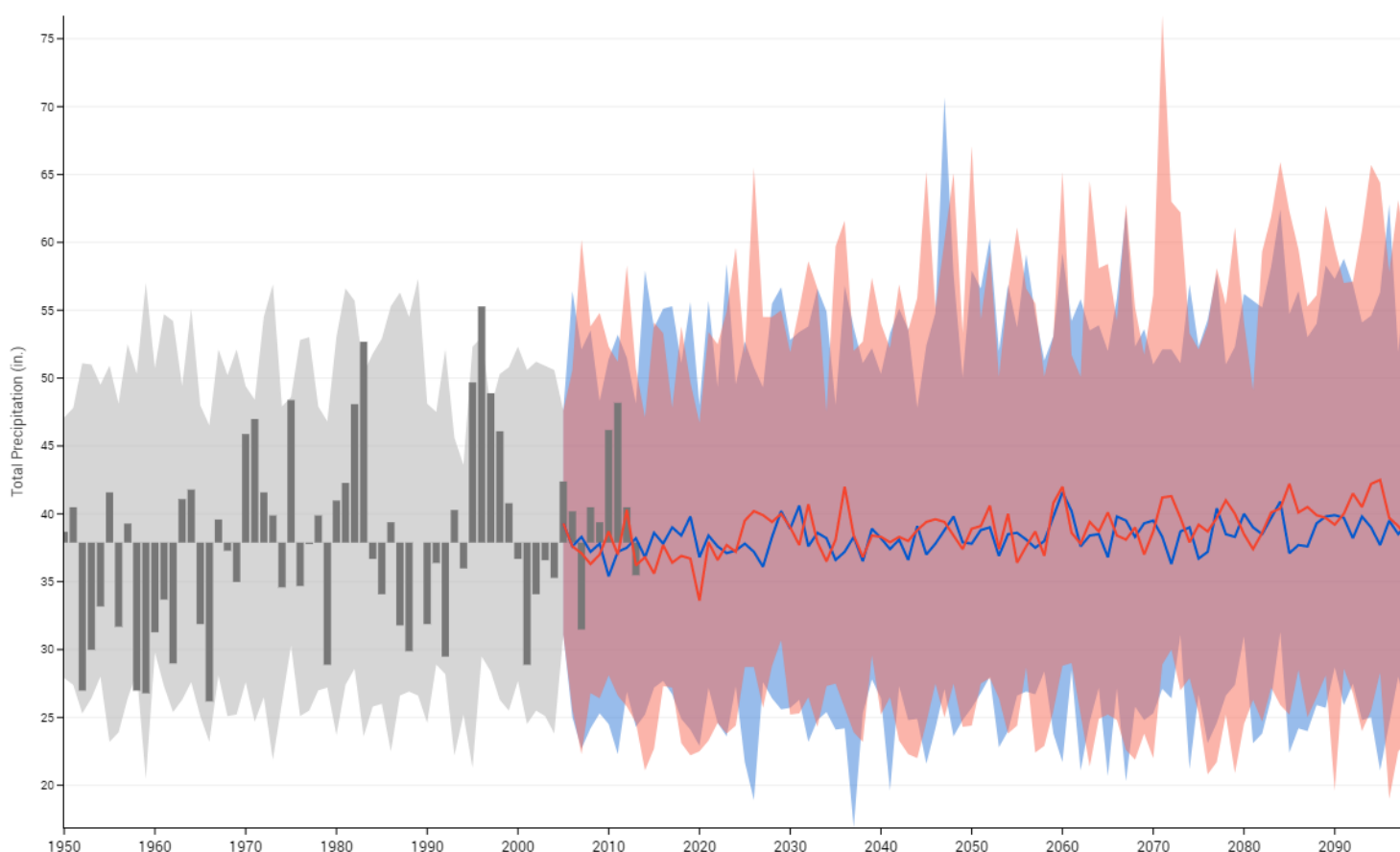


Exhibit 3.11-3: Total annual precipitation until the year 2100. The light grey represents modeled history, the dark grey represents observed history, with the red coloration being RCP 8.5 and the blue coloration being RCP 4.5.¹⁷⁸

¹⁷⁶ Ning and Bradley, 2015

¹⁷⁷ Grand Targhee Resort Ski Srsort Area Overview - OnTheSnow” n.d.

¹⁷⁸ USDA Forest Service 2018c

Shifts in Downhill Ski Season Length

The length of the downhill ski season is dependent on two things: (1) Early season temperatures, which influence snowmaking and (2) Natural precipitation and temperature, which influences water resources and existent snowpack on the mountain.¹⁷⁹ Recently, factors such as late winter snowpack and earlier spring melt have influenced the ski season not only in Teton County, Wyoming but across the CONUS. Due to temperature increases and associated snowfall decreases, the downhill ski season length is projected to shorten on both ends, as ideal winter snowpack develops later, and spring melt occurs earlier. In addition, days of viable skiing and a decrease in overall snowfall during the season are projected to decline due to rising temperatures.¹⁸⁰ Not only do temperature and precipitation pose a threat to snowpack, but a projected increase in rain would also make it more challenging to keep snow on the ground.

Snowpack and Snowmaking

There are multiple factors that influence the level of snowmaking that can occur. Highly important factors include humidity and temperature. With an average humidity at 60 percent, artificial snow can be manufactured at around 27°F, with ideal temperatures being 21°F.¹⁸¹ Additionally, to create sufficient snowpack, ski resorts require between 400-500 hours of suitable snowmaking conditions. Currently, GTR reaches an average 450 hours of snowmaking between November 1st – 15th (refer to **Exhibit 3.11-4**). However, according to climate projections, sufficient levels of snowpack would be reached 10-20 days later (RCP 4.5) or 30-70 days later (RCP 8.5).¹⁸²

¹⁷⁹ Wobus et al. 2017

¹⁸⁰ Chin et al. 2018

¹⁸¹ Michon 2018

¹⁸² Wobus et al. 2017

Furthermore, analysis of snow water equivalent (SWE) has projected that it is going to decrease over the next 78 years (refer to **Exhibit 3.11-5**).¹⁸³ SWE is the amount of water contained within a snowpack at a certain location. It is also thought of as the depth of water that would result if the whole snowpack was melted. It has been projected that reductions in snowpack and shifts in snowmelt are expected in the future. Overall, the potential for warming and earlier snowmelt has the potential to accelerate the start of wildfire season along with disrupting timing and abundance of streamflow.¹⁸⁴ Along with this, snow residence time is expected to decrease as well (refer to **Exhibit 3.11-6**).¹⁸⁵ Snowpack is a valuable resource, in which changes have the potential to affect agriculture, winter recreation, and tourism, along with plants and wildlife in some areas.¹⁸⁶



Exhibit 3.11-4: The average date by which a resort must reach an average of 450 hours of snowmaking in order to create sufficient snowpack.

¹⁸³ Luce, Lopez-Burgos, and Holden 2014

¹⁸⁴ U.S. EPA 2007a

¹⁸⁵ Luce, Lopez-Burgos, and Holden 2014

¹⁸⁶ U.S. EPA 2007a

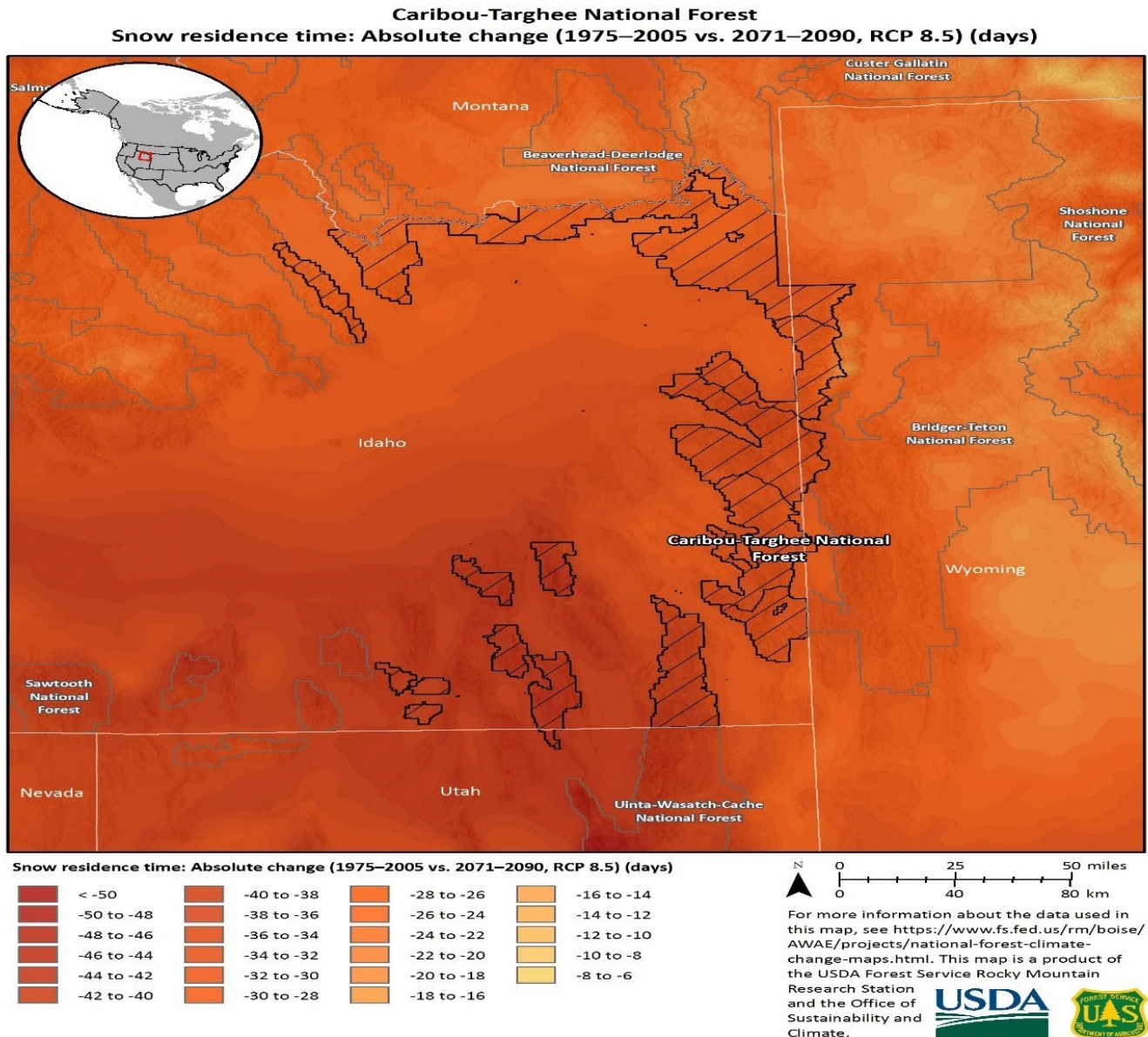


Exhibit 3.11-5: SWE within the intermountain region per RCP 8.5. It is projected that there could be a -20 to -5 percent change in SWE within the project area. This means that SWE could decrease by as much as 20 percent.

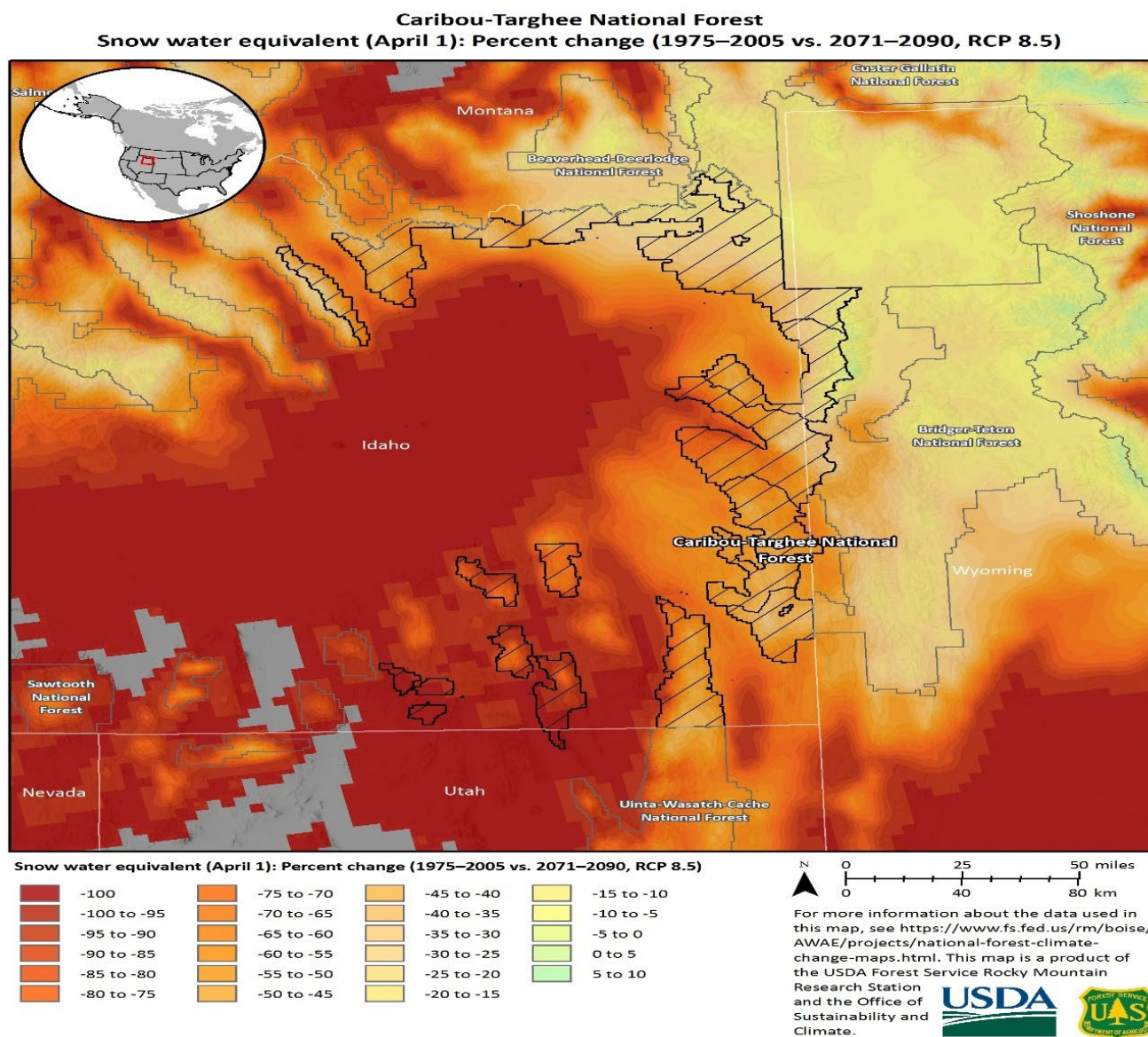


Exhibit 3.11-6: Snow residence time (SRT) within the intermountain region per RCP 8.5. It is projected that the project area could have 28-36 less days of SRT.

SKI AREA OPERATIONS AND CLIMATE CHANGE

Ski area operations including running lifts, snowmaking, grooming, construction, and completing general maintenance tasks have short- and long-term effects on climate change.

Short-Term Effects on Climate Change

Normal maintenance and construction operations can contribute to climate change in the short-term.

Tasks that require the use of heavy equipment or flying of helicopters to replace lifts or remove trees only contribute to climate change during the duration of the maintenance or construction project. Additionally, the construction of new facilities and lifts can contribute to climate change in the short-term (refer to **Section 3.10** for more information).

Long-Term Effects on Climate Change

Operation of lifts and snowcats daily and nightly have long-term effects on climate change. Additionally, vehicle traffic due to the increase in visitation, especially in the first five years after expansion (see **Section 3.5.3**), would result in possible long-term effects on climate change through their emission of CO₂, CH₄, NO_x, and SO₂.

Conversely, GTR is largely powered by renewable sources (84 percent hydroelectric, 10 percent nuclear, and 1 percent wind).¹⁸⁷ The remaining 5 percent comes from the local energy market.¹⁸⁸ Because GTR, and all of the lifts it operates, is powered by a source that is 95 percent renewable rather than sourced by fossil fuels, the amount of power used by GTR, and its ski area operations does not measurably contribute to the emission of CO₂, CH₄, NO_x, and SO₂.

As a result, daily activities on the mountain like warming of facilities, use of restrooms and showers, and restaurant use, are greatly reduced in their long-term contributions to climate change (refer to **Section 3.10** for more information).

Climate Adaptation

Due to the effects of climate change, ski areas like GTR may have to implement specific climate adaptations both in the short- and long-term to mitigate impacts from climate change. Various adaptations strategies need to incorporate ways to transition recreation management to address shorter winter recreation seasons and changing recreational use patterns. Strategies may include expanding facilities where concentrated use occurs, more snowmaking, additional ski lifts, and higher elevation runs. Along with this, incorporation of multi-season recreational opportunities may prove to be more beneficial. Warm weather activity seasons are expected to lengthen as higher temperatures lead to later snowpack establishment and earlier snowmelt.¹⁸⁹ Adaptation strategies could include increasing flexibility and capacity for managing recreation resources to meet shifting demands. Incorporated with this is increasing the flexibility of year-round use of facilities through redeveloping/mitigating existing or new sites (e.g. implementing summer uses into ski area operations); paving access roads for winter and wet uses; installing gates or other access control where snow no longer closes areas; changing types of infrastructures; and increasing the capacity at existing sites to accommodate longer use seasons.¹⁹⁰

¹⁸⁷ Fall River Rural Electric Cooperative 2022

¹⁸⁸ Personal correspondence with Fall River, 01/05/2022

¹⁸⁹ Halofsky et al. 2018

¹⁹⁰ Adaptation Partners, 2021

Similarly, GTR is already taking steps to decrease their CO₂, CH₄, NO_x, and SO₂ emissions and to offset their carbon emissions. Through their various sustainability partnerships with Protect our Winters (POW) and the National Ski Areas Association (NSAA), GTR is learning how to adapt to climate change while also decreasing their impact on climate change overall.¹⁹¹ These partnerships outline specific projects and initiatives that GTR is taking to either minimize their emissions or improve their recycling programs. Through these partnerships, GTR incorporates new sustainability programs and identifies new ways to decrease their emissions. These partnerships are important to this project, as GTR would continue to incorporate them to decrease their emissions and thus their impact on climate change overall.

Protect Our Winters (POW)

GTR was the first ski resort to partner with POW in 2009. POW specializes in mobilizing the snowsports and outdoor communities against climate change. POW's main focus is on youth education, climate advocacy, and community activism.¹⁹² Through this partnership, GTR has committed to donating money towards climate advocacy and land stewardship, focusing on reducing their carbon footprint, supporting strong climate policy, and being a vocal advocate against climate change. GTR's employees can donate dollars from their paychecks to POW, with each dollar being matched by GTR. To this date, around \$100,000, or \$7,500 per year, has been donated to support land conservation and stewardship in Teton County, Idaho.¹⁹³

National Ski Areas Association (NSAA) Climate Challenge

The NSAA's Climate Challenge encourages ski resorts across the nation to take on climate change. Through this challenge, ski areas must track and inventory their GHG emissions, set an emissions reduction goal, and implement a project a year aimed at reducing GHG emissions. Projects that have been completed in accordance with this challenge are as follows:¹⁹⁴

- A Tier 3 diesel groomer was upgraded to a Tier 4. This decreases the emissions of particulate matter and NO_x by 45 percent as compared to Tier 3 use.¹⁹⁵
- New doors were installed in chairlift houses to provide better insulation, along with new programmable heaters to replace inefficient units.
- Installation of a new networking monitoring/automation equipment system for the Water Treatment and Snowmaking operations to assist staff in running departments more efficiently through managing water usage systems remotely.
- The IT department's enactment of a new program that automatically shuts down the base area computers each night. This saves an estimated 50,000 kWh in electricity.
- POW Carpool Challenge in February 2019. Guests were encouraged to carpool to decrease GHG emissions. By doing so on the weekends, they were entered into weekly drawings for prizes. In 2019, 26,000 individuals were shuttled from the surrounding area to GTR.

¹⁹¹ GTR n.d.

¹⁹² Protect Our Winters 2020

¹⁹³ GTR n.d.

¹⁹⁴ National Ski Areas Association 2019

¹⁹⁵ US EPA 2018¹⁹⁶ GTR n.d.

- Integration of sustainability efforts into employee training and orientation materials, as well as the lodging information.
- Around 500 incandescent light bulbs in the base area and on-mountain facilities were replaced with newer, more efficient LED bulbs. Fluorescent T12 bulbs were switched to T8s. It is estimated that these upgrades saved more than 53,000 kWh and 37 tons of CO₂ emissions per year.
- Over 25 tons of recycling was diverted from the landfill, including 350lbs. of lift tickets and 20,000 energy bar wrappers through the Terracycle recycling programs.
- Teton Mountain Outfitters, GTR's on mountain retail store, implemented a "no one-time-use bags" policy. This prevented around 4,000 plastic bags that would have been used otherwise.
- Stone paper, from Stone Paper Solutions, is utilized for all trail maps. Stone paper is composed of 75 percent or more recycled material. Through a clean production process this process avoids the air and water pollution that is associated with paper production. It uses 85 percent less energy and has a 67 percent smaller front-end carbon footprint.
- The Human Resources department made the transition to Kronos, eliminating paperwork from the hire, termination, review, and HR related processes. Similarly, the Guest Service and Ski/Snowboard School departments transitioned to an online waiver system, decreasing the use of paper overall.

NSAA Vehicle Idling Policy

In 2008 GTR adopted NSAA's No Idling Policy. This policy limits gasoline-powered vehicles to idle for five minutes and 15 minutes for diesel vehicles. Through this policy, GTR aims to raise awareness of the impacts idling has on air quality and climate change. GTR hopes to reduce overall fuel use and reduce emissions associated to unnecessary idling.¹⁹⁶

NSAA Sustainable Slopes Charter

The NSAA Sustainable Slopes Charter has prompted the ski industry to be leaders among the outdoor recreation community to promote environmental stewardship by improving environmental performance in all aspects of their operations. GTR joined the Sustainable Slopes Charter and has made improvements across the mountain to combat climate change and promote environmental stewardship (refer to *National Ski Areas Association (NSAA) Climate Challenge* previously for more information).¹⁹⁷

3.11.4 Direct and Indirect Environmental Consequences

The following sections present the direct and indirect environmental consequences anticipated under the action alternatives. Interactions and impact analysis between climate change and other resources considered in this DEIS are discussed in the following resource sections in **Section 3.1**, **Section 3.10**, **Section 3.12**, **Section 3.13**, **Section 3.14**, **Section 3.15**, and **Section 3.16**.

US EPA 2018¹⁹⁶ GTR n.d.

¹⁹⁷ Ibid

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, GTR's resources would remain in their existing conditions and the ski area would continue to operate with existing terrain and lifts.

The contribution of the activities at the ski area such as visitor traffic/emissions, maintenance and operations, and water use to climate change would resemble current trends, which is anticipated to increase slightly for approximately five years, then decrease to current levels (see **Section 3.1.3**). No additional effects from the Proposed Action to emissions would occur under the No Action Alternative.

Similarly, the effects of climate change on operations at GTR would be consistent with current trends. GTR would continue to experience changes in winter and summer temperatures; the timing and amount of precipitation that falls as snowpack; and the timing and duration of the winter season and snowmelt/runoff due to climate change. Current climate induced effects would be expected to continue under the No Action Alternative, and could affect snowmaking capacity, visibility, visitation, and operations at GTR.

ALTERNATIVE 2 – PROPOSED ACTION

Climate Change Impacts on Proposed Projects and Operations

As discussed in the Precipitation section previously, precipitation in the form of snowfall is expected to decrease. A decrease in snowfall could create a limit on available water that GTR utilizes to operate their on-mountain facilities. This may pose a difficulty for the construction of Fred's Mountain Top Guest Facility as water for the facility is proposed to be used from a groundwater well. Similarly, water that is going to be used for the proposed snowmaking would be accessed from existing and new groundwater wells (refer to **Section 3.15** for more information). The decrease in the amount of annual precipitation delivered as snowfall has the potential to impact the available water used for snowmaking. With the predicted warming temperatures, a larger percentage of the annual precipitation is expected to be delivered as rainfall. Not only would this pose a difficulty for Fred's Mountain Top Guest Facility and proposed snowmaking, but also the existing vegetation within GTR. Less precipitation and hotter conditions create a higher frequency of wildfires along with drier conditions in and around GTR, which represents a shift from legacy conditions that the vegetation in the area is adapted to. In the event of exceptionally dry years or wildfires outside the normal range of variation that were influenced by climate change, vegetation could be severely impacted. Climate change may impact the duration, timing, and nature of visitation to the resort, which in turn may affect the types of operations and amenities provided at GTR.

Furthermore, with increases in temperature, the existing snowpack is more likely to melt faster as compared to historical conditions.¹⁹⁸ This has serious implications for snow rain transition (SRT). SRT is influenced by both temperature and precipitation. It is predicted that in regions similar to GTR, precipitation would fall as rain instead of snow.¹⁹⁹ Precipitation in the form of rain has serious repercussions for SRT. Rain affects the ability of the snowpack to maintain its base temperature. With a higher base temperature, existent snowpack has a greater possibility of melting faster and breaking

¹⁹⁸ Luce, Lopez-Burgos, and Holden, 2014

¹⁹⁹ U.S. EPA 2007b

down.²⁰⁰ This not only decreases the overall maximum snowpack depth but also poses public safety concerns in the form of avalanches. In a study done in the central Cascade Mountains in Washington, immediate avalanching, delayed avalanching, and a return to stability occurred after a rain event.²⁰¹ Consequentially, areas like the South Bowl, which is already prone to avalanches and has a south facing aspect, could see an increase in avalanches in the future (refer to **Section 3.7** for more information).²⁰²

Not only would SRT at GTR decrease, but the capacity for GTR to make artificial snow also has the potential to decrease. Although there may be more precipitation in the form of rain to support snowmaking, specific temperatures are needed for snowmaking, and due to increases in temperature there is a projected shift in viable days for snowmaking at GTR. As mentioned previously, under RCP 4.5 it was determined that for the Southern Greater Yellowstone region, the median maximum temperature is projected to rise to 5°F and the median minimum temperature is projected to rise about 6°F. Whereas under RCP 8.5, the median maximum temperature is expected to rise about 11°F and the median minimum temperature is expected to rise about 12°F by 2100. This has implications for ski season length as the snowmaking GTR relies on to open may decrease due to higher temperatures being predicted. GTR may have to invest in more snowmaking cannons or offer more shoulder season recreational opportunities to address these changes in the future.

As previously described, the proposed South Bowl is a south-facing slope. Southern-facing slopes are known for not keeping a sufficient snowpack throughout the year as compared to north-facing slopes. North-facing slopes reach their maximum snowpack depth in early spring, whereas south-facing slopes go through fluctuations of episodic snow and melt events throughout the winter and early spring.²⁰³ Additionally, south facing slopes are prone to hotter temperatures as compared to north facing slopes. In a study done on the rain-snow transition for the Colorado Front Range it was found that north-facing slopes were on average 4.2°C (39.6°F), whereas on the south-facing slopes it was an average 6.2°C (43.2°F).²⁰⁴ This trend is relevant to the proposed South Bowl area as it has a southeast aspect. Snow management would be necessary due to the sun and warming this area would receive from its southerly aspect. It is important to note that the portion of the South Bowl area that is proposed for incorporation into the GTR SUP boundary also has an eastern facing aspect through the majority of the terrain. Favorable wind patterns and loading over the ridge have proven that this terrain can hold viable snow throughout the portion of the season that it would be operational. Additionally, the lift and terrain configuration that is proposed is largely above tree line and stays within higher elevations that have longer SRTs. This proposed terrain area could be operated without supplemental snowmaking; however, the number of days that this area would be open to the public would be less than other areas of the mountain. This is consistent with GTR's plans to provide lift-served skiing within the South Bowl. Into the future, this trend could be exacerbated by climate change and additional snow management features and/or snowmaking could be necessary. If these projects were determined to be necessary in the future, they would be subject to a separate NEPA analysis. Additionally, the quality of skiing in this area could decrease as forests become more susceptible to insect and disease outbreaks as a result of climate change. As trees within the ski area are impacted by insects and disease, they could die and fall over or remain dead standing trees.

²⁰⁰ Luce, Lopez-Burgos, and Holden, 2014

²⁰¹ Conway and Raymond 1993

²⁰² Ibid

²⁰³ Hinckley et al. 2014

²⁰⁴ Ibid

These trees could pose safety hazards to guests within the ski area and certain areas of the SUP could become closed as mitigation measures are undertaken. Further, as trees die, the guest experience of gladed skiing could be reduced as less trees could exist in the future reducing the ability of GTR to provide gladed skiing experiences.²⁰⁵

Furthermore, even though higher elevation areas, like South Bowl would have longer SRTs, areas lower in elevation like Mono Trees would not. SRTs at lower elevations would decrease, potentially prompting a need for snowmaking in this area in the future. Although snowmaking could occur, the number of viable days for snowmaking could decrease, which could pose a threat to the number of days that this area could be open to the public. Along with this, while higher elevation areas like South Bowl would experience consistent snow throughout the winter, mid- to low-elevation areas, like Mono Trees, are expected to experience midwinter rain and more rain-on-snow flooding, leading to midwinter flooding and unstable snowpacks. Overall, higher elevation areas would fare better to shifts in temperature and changes in snowpack, as compared to lower elevation areas.²⁰⁶

Lastly, the combination of a shorter winter season and earlier spring melt would have serious impacts on water resources, ecosystems, and the economy at GTR.²⁰⁷ While this temperature and precipitation projection do not particularly favor a large snow base at GTR, it does highlight the critical need for the ski area to have good snowmaking so it can be reliably open as much of the season as possible. It also shows that there is a need to diversify GTR's operation with more summer and alternative forms of mountain recreation along with incorporating various adaptation strategies into long-term planning. These adaptation strategies could range anywhere from implementing new snowmaking infrastructure and constructing additional ski runs at higher elevations to increasing the available shoulder season and multi-season recreational opportunities. Projects that are not included within this NEPA analysis would have to go through a separate analysis if determined a priority for GTR. Currently, within the Proposed Action, GTR proposes 29 additional miles of summer recreation trails, a canopy tour/fly line, a zip line, an aerial adventure course, and a disc golf course. GTR is also proposing to have alternative winter activities like a snow tubing facility, and the expansion of Nordic skiing, snowshoeing and fat tire biking opportunities. All of these opportunities would provide supplementation to GTR's operations as the effects of climate change occur.

Potential Contributions of Proposed Projects to Climate Change

There are three categories of activities that would contribute to climate change from the proposed projects: (1) emissions of CO₂, CH₄, NO_x, and SO₂ from construction of the projects; (2) emissions of CO₂, CH₄, NO_x, and SO₂ from additional winter visitation and operation of proposed infrastructure in the off-season; (3) emissions of CO₂, CH₄, NO_x, and SO₂ from additional summer visitation as generated by the proposed projects. Overall, emissions from construction are expected to be very small, representing a 0.1 percent or less increase in NAAQS pollutants across Wyoming (see **Section 3.10.4**), and would only occur in the short-term until the projects are complete. The increase in year-round visitation, and thus an increase in vehicular activity would have a long-term measurable impact on CO, NO_x, and CO₂; however, this is expected to be a less than 0.5 percent increase compared to current statewide emissions. Emissions

²⁰⁵ Halofsky et al. 2018

²⁰⁶ Ibid

²⁰⁷ Ning and Bradley 2015

from year-round operations and summer visitation are not expected to generate substantial additions. For more information on these potential contributions, refer to **Section 3.10**.

ALTERNATIVE 3 – NO SUP EXPANSION

Climate Change Impacts on Proposed Projects and Operations

Alternative 3 would be impacted by climate change in a similar fashion as the Proposed Action (refer to Alternative 2 – Proposed Action for more information). Overall, precipitation in the form of rain is expected to increase, SRT is expected to decrease, and viability of snowpack would decrease. Through the offering of multi-season recreation like hiking and mountain biking, GTR would adapt to these impacts from climate change. Although climate change impacts would be similar, impacts to South Bowl and Mono Trees expansion areas would be non-existent as these proposed SUP expansions are not included in this alternative. Specifically, the maintenance of the south facing slopes and dealing with solar warming in the South Bowl would not be introduced into GTR's operations.

Potential Contributions of Proposed Projects to Climate Change

Alternative 3 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action above for more information). Although effects are similar, Alternative 3 would have a slightly lesser effect overall as compared to the Proposed Action. This is due to Alternative 3 not including the South Bowl and Mono Trees expansion. However, due to GTR operating on mostly renewables (95 percent), the operation of these lifts isn't expected to contribute much to climate change in terms of emissions. Without the construction and installation of the South Bowl Lift, Mono Trees Lift, avalaunchers, and accompanying ski runs, vehicle trips are expected to be reduced and thus less emissions would be produced (refer to **Section 3.10** for more information).

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Climate Change Impacts on Proposed Projects and Operations

Alternative 4 would be impacted by climate change in the same way that the Proposed Action would be (refer to Alternative 2 – Proposed Action for more information). With the inclusion of South Bowl, threats of avalanches, an increase in public safety (refer to **Section 3.7**), and the possibility of a less viable snowpack would still be present. With the installation of avalaunchers, the threat of avalanches in the South Bowl area would possibly be mitigated and thus public safety impacts would be diminished. This alternative does not include the Mono Trees expansion; therefore, impacts from climate change are expected to be less overall, although a very minimal difference from Alternative 2 as the low elevation Mono Trees area that would be most affected by climate change would not be included in Alternative 4.

Potential Contributions of Proposed Projects to Climate Change

Alternative 4 would have a similar nature of effects to climate change as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information). Although effects are similar, Alternative 4 would have more effect as compared to Alternative 3, and an overall lesser effect as compared to the Proposed Action on climate change, mostly due to decreased visitation, construction, and operations emissions associated with this alternative (refer to **Section 3.10** for more information).

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Climate Change Impacts on Proposed Projects and Operations

Alternative 5 would be impacted by climate change in the same way that the Proposed Action would be (refer to Alternative 2 – Proposed Action for more information). Specifically, Alternative 5 would be impacted less due to not including the South Bowl expansion. There would be less of a threat to public safety from avalanches and decreased public safety issues overall (refer to **Section 3.7 – Public Safety** for more information).

Potential Contributions of Proposed Projects to Climate Change

Alternative 5 would have similar effects on climate change as Alternative 4. Furthermore, Alternative 5 would have less of an effect on climate change as compared to the Proposed Action, mostly due to decreased visitation, construction, and operations emissions associated with this alternative (refer to **Section 3.10**).

3.11.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the GTR SUP area and on adjacent NFS lands, as well as throughout Teton County, Wyoming.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for climate change resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for climate change resources are limited to public and private lands in the vicinity of GTR's operational area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects project area, the reader is referred to **Appendix A** in the document. Past ski area and regional development projects have been incorporated and analyzed in this document as part of the Affected Environment. Projects that could have both beneficial and adverse cumulative impacts on climate change are analyzed in the following discussion.

Climate adaptation measures and GTR's participation in the NSAA Climate Challenge, as well as other NSAA policies to prevent CO₂ and CH₄ emissions, could have beneficial cumulative impacts on CO₂ and CH₄ emissions and climate change.

Continued development and use of fossil fuels at GTR, throughout Teton County, and around the world would continue to escalate the issue of climate change. The Proposed Action would contribute a small amount of emissions to overall Teton County and State of Wyoming emissions. These effects could increase risks such as wildfire and heavy precipitation events, change the amount and timing of snowfall

and snowmelt, and affect visibility. Temperature increases or variability may result in shortened ski seasons. Climate adaptation measures at GTR and in the Teton County region could have a small beneficial cumulative effect on locally-produced CO₂ and CH₄ emissions, waste diversion, and water use, but may not have substantial cumulative effects that reduce the impacts of climate change at a broader scale.

3.11.6 Irreversible and Irretrievable Commitments of Resources

The addition of new trails, snowmaking capability, and infrastructure at GTR represent irretrievable contributions to climate change, because the emissions that would be generated from the construction of the proposed projects and increased visitation would contribute to climate change and be influenced by climate change. However, these emissions are not considered irreversible due to offsetting and mitigation that could possibly occur in the future. These offsetting and mitigation measures include consideration of the loss of carbon sequestration capacity resulting from vegetation removal, which could be reversed in the long-term if vegetation were allowed to regrow. Additionally, measures could be put into place to reduce vehicular and construction emissions that might impact air quality and visibility.

3.12 Vegetation

3.12.1 Scope of Analysis

This analysis summarizes the *Biological Assessment for Whitebark Pine* (Wildlife and Botany BA), the *Biological Evaluation for Botany* (Botany BE), the *Old Growth Forest Assessment* (Old Growth Assessment), and the *Noxious Weed Risk Assessment* (Noxious Weed Assessment), all of which are available on the [project website](#).²⁰⁸ Species included in this analysis were identified as *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive plant species*, TNF SOLC, and Wyoming Natural Diversity Database (WYNDD). Old growth vegetation was also assessed, along with the presence of noxious weeds. Excluding whitebark pine, there are 11 Forest Service Region 4 Sensitive Species listed, 0 SOLC, and 65 WYNDD Species of Concern with potential to occur within the project area. Based on this and the habitat preferences of the project area it was determined that six species were considered likely to occur in the project area, of which four are Forest Service Region 4 Sensitive Species. Details of these species, old growth vegetation, and noxious weeds within the project area are described in the following sections.

3.12.2 Federal, State, and Local Policy and Guidance

1997 FOREST PLAN

The *1997 Forest Plan* provides the following standards and guidelines related to sensitive plant taxa:

Vegetation Guideline 8: Maintain, and where possible, increase unique or difficult-to-replace elements or habitats such as whitebark pine, and areas of high species diversity, such as aspen, riparian zones, etc.

Plant Species Diversity Standard 1: Information on the presence of listed threatened, endangered, or sensitive plant species will be included in all assessment for vegetation

²⁰⁸ Alder Environmental 2023 b, c, and d

*and/or ground disturbing management activities. Appropriate protection and mitigation measures will be applied to the management activities.*²⁰⁹

In relation to old growth forest areas, located within Targhee Principal Watersheds (TPWs): Teton Creek (TPW 19) and Leigh Creeks (TPW 20) each principal watershed should maintain a minimum of 20 percent of late seral and old growth forest. A guideline in the *1997 Forest Plan* specifically states:

In each principal watershed, the combination of old growth and late seral forest stage acres will be 20 percent or more of the forested areas.²¹⁰

The *1997 Forest Plan* does not provide direct guidance regarding the management of noxious weeds or invasive plants; however, it does provide three guidelines that indirectly address them. These guidelines are presented in the *1997 Forest Plan* on page III-14. Please refer to the **Noxious Weed Assessment** for more information.

FOREST SERVICE MANUALS

FSM 2600 provides guidance for the management of wildlife, fish, and sensitive plant habitat. There are various directives including objectives, policies, definitions, and objectives of the biological evaluation that FSM 2600 provides. Refer to the **Botany BE** for more information.

There are also three FSMs that provide policy and direction related to the management of noxious weeds and invasive plants. FSM 2070, Native Plant Materials Policy, provides direction on the proper use of native plant materials in re-vegetation, rehabilitation, and restoration of aquatic and terrestrial ecosystems. FSM 2150, Pesticide Use Management and Coordination Policy, provides guidance on the use of pesticides as part of a pest management approach. Finally, FSM 2900 provides nationwide policy on the management of invasive species. Please refer to the Noxious Weed Assessment for more information.

ENDANGERED SPECIES ACT OF 1973 – 2022 WHITEBARK PINE

Forest Service policy requires a review of programs and activities to determine their potential effect on threatened, endangered, and proposed species. The United States Fish and Wildlife Service (USFWS) listed Whitebark Pine (WBP) (*Pinus albicaulis*) as threatened under the Endangered Species Act of 1973 (ESA), as amended, on December 15, 2022. The USFWS finalized a 4(d) rule that identifies actions and prohibitions required for the preservation and recovery of the species, including a limited number of exceptions to the prohibited acts. WBP has previously been listed as proposed threatened since 2020 and as a Candidate Species since 2011. The USFWS concluded that habitat loss is not a driving threat to WBP, so critical habitat was not designated. Under the section 4(d) rule, the removal, damage, or destruction of WBP on federal lands, as well as the import, export, transport, or sale of the species is prohibited. Exceptions are included to allow for forest management strategies that promote the survivability of WBP.

Section 7(a)(1) of the ESA requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires that federal agencies ensure that any action is not likely to inhibit the continued existence of federally listed species, or destroy, or adversely modify designated critical

²⁰⁹ USDA Forest Service 1997

²¹⁰ Ibid

habitat. This analysis and documentation conform to legal requirements as provided under section 7 of the ESA. Refer to the WBP Assessment for more information.

EXECUTIVE ORDERS

Executive Order 13112

There are many laws and regulations that provide direction and guidance on the management of invasive species and vegetation. Executive Order 13112 that identifies specific guidance for invasive species applies to this analysis. This Executive Order directs federal agencies to identify actions that may impact invasive species, prevent the introduction of invasives, detect and control invasives, monitor species, provide restoration of native species, conduct research on invasive species, promote public education on these species, and to not authorize or fund actions that are likely to cause the introduction or spread of invasive species.²¹¹

3.12.3 Affected Environment

The existing GTR SUP spans western slopes and valleys below Fred's Mountain and Peaked Mountain. Lower elevation (7,500 – 8,200) conifer forests and aspen are interspersed with wetlands and subalpine herbaceous communities. The Douglas-firs and lodgepole pines at lower elevations merge with Englemann spruce and subalpine fir at higher elevations. Above 8,500 feet soils become rockier and more exposed, providing habitat for WBP and low-lying herbaceous plants.

At higher elevations (above 8,500 feet) WBP and low-lying herbaceous plants exist. The recent listing of WBP in 2022 determined that white pine blister rust was the leading threat to WBP. Pre-project surveys in 2020 determined that 70 percent of WBPs within the Greater Yellowstone Ecosystem are infected with white pine blister rust, and white pine blister rust is prevalent among trees in the project area.

During pre-project botanical surveys, no Forest Service Region 4 Sensitive Species were observed, but two WYNDD Species of concern were encountered: keeled bladderpod (*Lesquerella carinata* var. *carinata*; synonym *Physaria carinata* ssp. *carinata*) and brightgreen spleenwort (*Asplenium trichomanes-ramosum*; synonym *A. viride*). One Forest Service Region 4 Sensitive species was not encountered during these pre-project surveys but was previously observed within the project area: Payson's bladderpod (*Lesquerella paysonii*; synonym *Physaria carinata* ssp. *paysonii*). These three species are analyzed further below.

The presence of late seral and old growth forest was also analyzed within each TPW, and a desktop review of data was completed. The best available data was utilized for this analysis and multiple reliable existing datasets were assessed to ensure accuracy in reporting the projects potential effects to late seral and old growth forests. In conjunction with this, a working definition for old growth within the project area was identified. It was determined that old growth is characterized by three aspects: diameter at breast height (DBH), trees per acre (TPA), and age. Existing vegetation data that was analyzed in a desktop review included, vegetation analysis from the Teton Canyon LAU and the TNF Mid-level Vegetation Map Geodatabase. These vegetation data and definition have been utilized to determine existing conditions of

²¹¹ Clinton 1999

old growth within GTR's existing and proposed SUP. Existing conditions of old growth are further described in the following *Old Growth* subsection.

Pre-project surveys were also conducted for invasive plants and noxious weeds. Botanists surveyed for Wyoming State Designated Noxious Weeds, and it was determined by Teton County Weed and Pest that noxious weeds exist throughout the project area. The presence of noxious weeds is further described under the following *Noxious Weeds and Invasive Plants* subsection.

THREATENED AND ENDANGERED SPECIES

Whitebark Pine

WBP (*Pinus albicaulis*) has a habitat range extending from central British Colombia east to the Canadian Rocky Mountains, with a southern habitat range extending from the Cascade and Sierra Nevada Ranges eastward through the northern Rocky Mountains of Idaho and Montana, ending in the Wyoming Basin.²¹² Within the Greater Yellowstone Ecosystem (GYE), WBP are the dominant conifer in high elevation tree line environments, and serve to facilitate community structure at tree line sites.²¹³ WBP is also considered a keystone species of subalpine ecosystems, as it supports the survival of other species and functions to increase biodiversity.

Surveys for the presence of WBP within the project area were conducted between July 30 and August 15, 2019. From these surveys, it was determined that several thousand WBP trees were documented within the project area. The highest densities of WBP trees existed at the high elevations and exposed ridges of GTR's existing and proposed SUP. WBP was not found within aspen stands or low-elevation drainages. Density of WBP ranged from one to more than 25 trees per acre. Specifically, WBP has approximately 6,945 acres of habitat within the TPWs. This is approximately 11 percent of the total 62,505-acre analysis area of TPW19 and TPW20.

Most of the trees were healthy, but many trees were also dead, and symptoms of blister rust were present on roughly one-quarter of the trees. Three "Plus Trees" were identified on the eastern end of GTR's existing SUP by the TNF in 2020. These WBP "Plus Trees" are ones that exhibit genetic resistance to white pine blister rust.

In summary, WBP trees within the project area are abundant and widespread, appear to be reproducing successfully, and exhibit a range of health conditions. Density of WBP within the existing and proposed SUP is most prolific near Fred's Mountain and Peaked Mountain, given the elevation of these areas. As identified in **Table 3.12-1** within the 3,282-acre project area, there are approximately 511 acres of WBP in a density of at least one tree per acre. Specifically, 239 acres contain 1 – 5 trees per acre; 76 acres contain 5 – 10 trees per acre; 80 acres contain 10 – 25 trees per acre; and 4 acres contain 25 trees or more per acre. Overall, approximately 200 acres, or six percent, of the project area contains an estimated five or more WBP trees per acre. Refer to the Wildlife and Botany BA for more information on the methodology of data collection.

²¹² USFWS 2018

²¹³ Wagner et al. 2018

Table 3.12-1. Estimated Density of Whitebark Pine Trees Throughout the Project Area

Estimated Density (tree/acre)	Methodology	Area (acres)
Low Density WBP		310.48
1-5	GPS & Binocular Surveys	239.19
Likely few WBP (estimated <5)	Not Surveyed - Aerial Imagery & GIS Analysis	71.29
Mid to High density WBP		200.71
5-10	GPS & Binocular Surveys	76.90
10-25	GPS & Binocular Surveys	80.53
25+	GPS & Binocular Surveys	4.14
Likely some WBP (estimated 5-10)	Not Surveyed - Aerial Imagery & GIS Analysis	22.37
Likely many WBP (estimated 10+)	Not Surveyed - Aerial Imagery & GIS Analysis	16.77
Total		511.19

WYOMING NATURAL DIVERSITY DATABASE SPECIES OF CONCERN

Keeled Bladderpod

During field surveys in 2019, keeled bladderpod was frequently observed across the project area in loamy, rocky soils in alpine and subalpine ridge crests, drainages, and slopes. Occupied habitat was high in elevation, ranging from 8,750 to 9,850, and usually in the vicinity of WBP. Within the project area, a total of 14 subpopulations, occupying a total of 14.7 acres were scattered from the Blackfoot chairlift to the slope south of Peaked Mountain (refer to **Table 3.12-2**). It was determined that habitats closest to ridge crests contained denser populations than as compared to habitats on lower slopes. Specifically, based on each survey point, approximately 51 percent contained zero to one plants within a square meter, 16 percent contained two to 10 plants, and 33 percent contained more than 10.

Table 3.12-2. Element Occurrences (EO) of Keeled Bladderpod Across the Project Area

New or Updated EO	EO Nickname	Estimated number of individuals	Subpopulations	Occupied Habitat (acres)	Elevation (ft)
Update	Dreamcatcher Summit	2000	4	7.3	8,800 – 9,850
New	Top of Blackfoot	1500	2	3.2	8,800 – 9,350
Update	Top of peaked	200	1	0.2	9,790
New	Peaked South Slope	200	4	1.3	8,750 – 9,250
Update	Peaked Chairlift	125	2	1.3	8,850 – 9,250
Update	Sacajawea Cliff	100	1	1.3	9,040

Brightgreen Spleenwort

The brightgreen spleenwort inhabits cliffs and crevices of limestone and other rocks with basic pH. During 2019 field surveys, the brightgreen spleenwort was observed in one place, in the crevices of limestone bedrock northwest of Mary's Saddle. This occurrence was new, and a fairly large population of 58 clusters of 2-30 stems. The elevation of the area was approximately 9,275 feet in a large bowl with Englemann spruce and subalpine fir nearby. The occupied space of this occurrence was just 0.04 acres. This occurrence is located within a popular side-country ski run below Mary's Nipple, and off-trail mountain biking use of the limestone rock was observed in this area. However, none of the individual plants were disturbed. The limestone cliffs that are located southwest, below Peaked Mountain, were inaccessible, but do have the possibility to provide habitat for the brightgreen spleenwort.

FOREST SERVICE REGION 4 SENSITIVE SPECIES

Payson's Bladderpod

The Payson's bladderpod inhabits gravelly calcium-rich ridge crests, slopes, and floodplains/bottomlands often associated with sagebrush grassland communities that are sparsely vegetated.²¹⁴ It is mostly found on southern aspect slopes in elevations ranging from 5,500 to 10,500 feet. Given their inhabitants of southern aspect slopes, the environment tends to be warmer and drier than surrounding areas. Payson's bladderpod was not identified within the project area during field surveys in 2019. A previously documented occurrence existed near the Dreamcatcher Lift around 9,900 feet, but no plants were found. This occurrence was observed in 1995 when fewer than 10 plants were observed. It is not known where

²¹⁴ Fertig 1997

the population has declined permanently or temporarily due to environmental variation. No other populations are known to exist within the project area.

OLD GROWTH

There are two TPWs that overlap the existing and proposed SUP area, which are TPW19 and TPW20. TPW19 encompasses both Mono Trees and South Bowl, whereas TPW20 encompasses only the existing SUP. Two existing and reliable data sets were used to determine existing conditions of late seral and old growth within the project area. These included the Vegetation Analysis for the Targhee National Forest Lynx Analysis Unit (lynx habitat data)²¹⁵ and the Caribou-Targhee Mid-Level Existing Vegetation Classification and Mapping (mid-level data).²¹⁶ Both datasets combine field surveys, photo interpreting, modeling, and Landsat and aerial imagery. However, the lynx habitat dataset was created for a smaller area, while the mid-level dataset covers all of the CTNF. The Vegetation Analysis for the Targhee National Forest Lynx Analysis Unit data is more accurate but only identified vegetation within a portion of TPW19, whereas the mid-level vegetation data identified vegetation within the entirety of both TPW19 and TPW20. The lynx habitat data encompasses approximately 90 percent of Mono Trees, but only a portion of South Bowl and the existing SUP (refer to the **Late Seral and Old Growth Assessment** for more information).

The analysis that is summarized in the following discussion utilized the entire lynx habitat data set and combined it with the mid-level vegetation data to account for the rest of TPW19 and the entire TPW20. Assumptions were made to merge the data, always deferring to an approach that would lead to the most conservative estimate of old growth and late seral stage vegetation in the analysis area. In other words, the approach that could result in the highest potential of late seral and old growth vegetation in the TPW-19 and TPW-20 to ensure that full scope of potential project impacts was analyzed. Specifically, the mid-level dataset did not match up exactly with the dbh ranges that are identified by Hamilton 1993²¹⁷ for old growth and late seral stage. For this reason, the old growth areas could not be specifically determined, but instead approximated by comparing late seral stand that may meet old growth characteristics (classified as “potential old growth” in **Table 3.12-3** below). For a complete discussion of methodology, the reader is referred to the **Late Seral and Old Growth Assessment** available in the project file.

Based on specific directions in the *1997 Forest Plan*, late seral and old growth forest stands should be in blocks over 300 acres in size.²¹⁸ Therefore, data was organized into contiguous polygons (forest blocks) of 300 or more acres. Analysis of combined late seral and potential old growth forest collectively and in 300-acre blocks, indicates the following existing conditions within TPW-19 and TPW-20.

The following Table 3.12-3 highlights the percentage of old growth and late seral stage stands using the best available data and direction from the Forest Plan.

²¹⁵ USDA Forest Service 2015

²¹⁶ USDA Forest Service 2014

²¹⁷ Hamilton 1993

²¹⁸ USDA Forest Service 1997

Table 3.12-3. Estimated Percentage of Late Seral and Old Growth Within TPW19 and TPW 20

TPW Analyzed and Organization	Percentage of Late Seral and Old Growth (%)
Percent Forested Acres in TPW19 in Late Seral/Potential* Old Growth	25.7
Percent Forested Acres in TPW19 in Late Seral/Potential* Old Growth in 300-acre Forest Blocks	21.7
Percent Forested Acres in TPW20 in Late Seral/Potential* Old Growth	28.9
Percent Forested Acres in TPW20 in Late Seral/Potential* Old Growth in 300-acre Forest Blocks	21.3

*Old growth areas could not be specifically determined but were approximated and thus classified as “potential old growth.”

As highlighted in Table 3.12-3, both TPW 19 and TPW 20 can be conservatively estimated to be comprised of over 20 percent old growth and late seral stage stands in their existing condition. Different data sets, assumptions, and qualifications have been considered to ensure accuracy in assessing the potential impacts to old growth and late seral stage stands within TPWs overlapping the project area. A discussion of potential changes to old growth and late seral stage stand composition under the action alternatives is included in the following *Old Growth* discussion within the *Direct and Indirect Environmental Consequences* section of this Chapter.

NOXIOUS WEEDS AND INVASIVE PLANTS

Surveys for invasive species and noxious weeds were conducted during the 2019 field surveys. A total of 81 infestations were found, concentrated in areas of disturbance. Weeds and invasive species were found primarily along roads and trails, in the base area, within wetland areas, and in areas grazed by cattle. Weed species that were encountered included Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), scentless chamomile (*Tipleurospermum perforatum*), and yellow toadflax (*Linaria vulgaris*) (refer to **Table 3.12-4** for more information).²¹⁹

Table 3.12-4. Noxious Weeds Observed at GTR During 2019 Field Surveys

Species and Priority Level by Teton County ²²⁰	Locations Found	Infestations Recorded	Approximately Total Number of Plants
Canada Thistle Priority 4	Roads, trails, base area, wetlands	49	1,532

²¹⁹ Teton County Weed and Pest District 2023

²²⁰ Priority 3 and 4 weeds are described by Teton County as established in large numbers, highly invasive, and posing a threat to non-infested native plant communities. Priority 3 weeds are localized and control is recommended to maintain them. Priority 4 weeds are widespread and their control is only recommended to maintain the weeds at their current level.

Musk thistle Priority 4	Roads, base area	20	52
Scentless chamomile Priority 4	Base area	8	654
Yellow toadflax Priority 3	Roads, trails	4	281
Total		81	2,519

Following 2019 field surveys, the construction of the Colter Lift occurred. Prior to this development only three infestations were observed in this area, two musk thistle and one yellow toadflax. The musk thistle infestation had evidence of herbicide spray, suggesting the area had been treated; therefore, if treated properly this infestation may not have spread during disturbance of the area. The yellow toadflax infestation was most likely not spread as machinery avoided the infested area. As a result of the new ground disturbance, there may be a few more infestations in the area that were not observed during surveying.

3.12.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Threatened and Endangered Species

Whitebark Pine

Under the No Action Alternative, vegetation within the project area would remain in the same condition as described in the Affected Environment section previously. Over the short-term, barring disturbance such as insects, disease, or wildfire, WBP and viable habitat for it would remain the same. Given winter and summer visitation is expected to increase at GTR, ski area activities and operations may cause direct loss of WBP saplings. Regeneration of WBP may also be impacted where activity within GTRs SUP increases. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have impacts to WBP. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may result in occasional removal of existing trees if they present a safety risk or could prevent regeneration or sapling success in some areas. However, continual regrowth likely keeps WBP presence in the project area steady under current practices. Further, given that WBP do not compete well with other conifer species, maintaining open areas around the species might promote its success and regeneration in some areas of the project area. Ongoing factors like white pine blister rust, predation by mountain pine beetle, increases in temperature, and habitat loss due to fire suppression could indirectly affect WBP. Overall, given the minor long-term indirect impacts, the determination for the No Action Alternative for WBP is may effect, not likely to adversely effect.

Wyoming Natural Diversity Database Sensitive Species

Keeled Bladderpod

The No Action Alternative reflects a continuation of existing conditions and operations at GTR. Besides natural vegetative cover changes with the seasons caused by succession, or the presence of insects, disease, and wildfire, the project area would remain unimpacted by development. Although there are no direct impacts from development, visitation at GTR is expected to increase during both the winter and summer. This increase in visitation could indirectly impact the keeled bladderpod in the form of compaction, trampling, and total removal due to grooming or mowing could occur.²²¹ In observation of the keeled bladderpod at GTR it appears that trampling of the plant by hikers or other forms of recreation does not threaten the long-term persistence or abundance of the plant; however, a substantial increase in this activity could have an adverse effect on the keeled bladderpod. Additionally, as a result of increases in temperature and increases in duration of droughts, the keeled bladderpod could be susceptible to moisture wicking from the soil, especially if it exists on ridgetops. However, as observed at GTR populations are the densest at ridgetops so may be the most resilient to such changes.

Brightgreen Spleenwort

Under the No Action Alternative current operations and development at GTR would remain the same. The brightgreen spleenwort would experience minimal impacts under the No Action Alternative. Given the location of the plant on the limestone rocks near the Dreamcatcher Lift, it is out of a primary ski way and would not experience impacts from winter recreation. In the summer, off-trail hiking and biking could impact the brightgreen spleenwort, as some off-trail hiking was observed during the 2019 field surveys. Similar to the other plants, changes in temperature and precipitation could have long-term impacts to the brightgreen spleenwort as the plant requires moist and shaded microsites.

Forest Service Region 4 Sensitive Species

Payson's Bladderpod

Although the Payson's bladderpod was not observed during the 2019 field surveys, it could still exist at the top of the Dreamcatcher Lift. Impacts under the No Action Alternative would be similar as described for the keeled bladderpod. As a result of snow grooming and operations snow compaction could occur, this could result in indirect impacts of altered hydrologic and soil conditions in habitat areas for Payson's Bladderpod. In the summer, direct impacts of trampling from hikers and other recreationists could occur. Additionally, as a result of increases in temperature moisture wicking of the soil could occur as well. Given the 1995 observance of Payson's bladderpod only having 10 individuals, it is highly susceptible to adverse effects.

Old Growth

Under the No Action Alternative, late seral and old growth forest would remain in the same condition as described in the Affected Environment section previously. Habitat and existing forest stands of late seral and old growth would remain the same, barring any impacts from insects, disease, or wildfire. Aspen and conifer saplings that would gradually change through natural succession to later seral stages could be impacted by the expected increase in visitation at GTR. Visitation during the summer and winter is

²²¹ Fahey and Wardle 1998

expected to increase and operation in the form of grooming and mowing could directly impact saplings, and thus succession to later seral stages and old growth. Overall, these direct impacts would be minimal in the long-term and would not reduce the percentage of late seral and old growth forest stands within the TPW19 and TPW20.

Noxious Weeds and Invasive Plants

Under the No Action alternative, GTR would continue to manage noxious weeds and invasive plants according to their current noxious weed management guidelines. In the situation that invasive species out compete native species, a management plan to mitigate these impacts may need to be established. Overall, the transport, establishment, and spread and control of noxious weeds and invasive species within the project area would continue to occur under current conditions. No adverse impacts due to noxious weeds and invasive species are anticipated.

ALTERNATIVE 2 – PROPOSED ACTION

Threatened and Endangered Species

Whitebark Pine

WBP prime habitat is located within a high elevation, sub-alpine environment. The most prolific WBP is present within GTR's existing SUP, and the South Bowl, given the high elevations of these areas. Specifically, high concentrations of WBP exist near Fred's Mountain and Peaked Mountain. WBP is not prolific within the Mono Trees expansion area, only two individuals were documented, given the lower elevations of this area. Under the Proposed Action, projects would result in a reduction in WBP within the existing SUP and the South Bowl and Mono Trees expansion areas. Specifically, the Proposed Action would cause approximately 78 acres of impacts to WBP (refer to **Table 3.12-5**). Specifically, glading, grading, and tree clearing processes to implement the Proposed Action would impact numerous individual trees throughout the existing SUP and proposed SUP. The process of glading (removing 40 percent of trees) would impact WBP only located within the existing SUP. Therefore, tree removal for glading would impact the same number of trees across all action alternatives. Through grading and tree clearing, approximately 282 trees or small stands of WBP would be impacted as a result of the Proposed Action (refer to **Table 3.12-6**).

Even though most WBP exist at high elevations, low elevation trees and ones that are in low density would be impacted by the Proposed Action more than mid to high density. This is in correlation to where the most development is proposed to occur, as more development is occurring at lower elevations than higher elevations. Approximately 44 acres of low density WBP would be impacted by the Proposed Action as compared to approximately 35 acres of mid to high density WBP (refer to **Table 3.12-7**).

Additionally, WBP trees that are cone bearing help to disperse seeds of the species and prompt regeneration. Under the Proposed Action no cone-bearing trees would be impacted given their presence at high elevation, but both non-cone bearing trees and mixed (cone bearing and non-cone bearing) trees would be impacted by the Proposed Action (refer to **Table 3.12-8**).

Table 3.12-5. Estimated Impacts to Areas of WBP Under the Proposed Action

Alternative	Potential Impacts to WBP Areas (acres)			
	Existing SUP	South Bowl	Mono Trees	Total
Alternative 2 – Proposed Action	59.33	19.50	0	78.83

Table 3.12-6. Estimated Impacts by Disturbance Type to WBP Individuals and Small Stands Under the Proposed Action

Estimated Density (tree/acre)	Methodology	Potential Impacts to WBP Surveyed Trees (individuals and small stands)
Glading (40 percent Tree Removal)		174
Glading (40 percent tree removal)	GPS & Binocular Surveys	154
Groomable Glades (40 percent tree removal)	GPS & Binocular Surveys	20
Grading and Tree Clearing (100 percent tree removal)		282
Grading	GPS & Binocular Surveys	47
Grading and Tree Clearing	GPS & Binocular Surveys	111
Tree Clearing	GPS & Binocular Surveys	124
Total		456

Table 3.12-7. Estimated Density of Impacted WBP Under the Proposed Action

Estimated Density (tree/acre)	Methodology	Area (acres)
Low Density WBP		43.82
1-5	GPS & Binocular Surveys	37.58
Likely few WBP (estimated <5)	Not Surveyed - Aerial Imagery & GIS Analysis	6.24
Mid to High density WBP		35.01

5-10	GPS & Binocular Surveys	11.93
10-25	GPS & Binocular Surveys	13.77
25+	GPS & Binocular Surveys	0.32
Likely some WBP (estimated 5-10)	Not Surveyed - Aerial Imagery & GIS Analysis	4.67
Likely many WBP (estimated 10+)	Not Surveyed - Aerial Imagery & GIS Analysis	4.32
Total		78.83

Table 3.12-8. Estimated Impacts to Different Types of WBP Individuals and Small Stands Under the Proposed Action

Alternative	Methodology	Potential Impacts to WBP Surveyed Trees (individuals and small stands)
Cone-bearing	GPS & Binocular Surveys	0
Non-Cone Bearing	GPS & Binocular Surveys	220
Mixed	GPS & Binocular Surveys	236
Total		456

The Proposed Action would cause a direct reduction in WBP within both the existing and proposed SUP. Under the Proposed Action approximately 1.13 percent of the WBP habitat within the project area would be reduced. This equates to approximately 0.13 percent of the TPWs and prime habitat for the WBP. Trees that are not directly impacted by the Proposed Action may be indirectly impacted by project related activities like soil compaction, altered hydrology, or ongoing trail maintenance. The grading or mowing around remaining trees during construction and maintenance processes could affect the health and viability of remaining WBP or impact the regeneration of WBP. Proposed avalanche control could also indirectly impact individual WBP. Natural avalanches already impact the species, but in bounds avalanche control by GTR has the potential to increase the frequency of avalanches. Although avalanche control work is intended to decrease the size and severity of avalanches within the project area, these activities are not well understood in terms of their potential to impact species as compared to natural avalanches.

Given the WBP is characterized as a keystone species, residual impacts to other resources may be experienced as individual trees and small stands are impacted. Impacts that could occur include but are

not limited to affects to watershed hydrology, slower forest succession, and decrease in food sources for grizzly bears²²² and Clark's Nutcracker (refer to **Section 3.13** for more information). WBP is one of the primary food sources for grizzly bears, and Clark's Nutcracker may relocate to other more prolific food sites. Given the Clark's Nutcracker is the primary transporter of WBP seeds and plays a symbiosis role in regeneration of the species, if they were to relocate recruitment and regeneration could be halted within the GTR's existing and proposed SUP.

Specific PDC have been included in this project to mitigate the impacts on WBP. PDC include during tree removal for new disturbances, five needle pine would be retained, and an alternate tree species would be removed; however, if this is not practicable, mature five needle pine would be approved by the Forest Service after sit-specific review. Additionally, tree islands of WBP would also be retained in proposed ski runs, particularly at higher elevations to increase visibility during low visibility conditions and to help mitigate the loss of WBP. As a result of these measures and the analysis contained in this section, the Proposed Action is in compliance with Plant Species Diversity Standard 1, as described in **Section 3.12.2**.

Despite PDC, the Proposed Action would not meet the intent of Vegetation Guideline 8, as described in **Section 3.12.2**. This is due to the direct impacts to WBP habitat that would occur under this alternative; however, at the scale of the *1997 Forest Plan* area, WBP population viability would not be threatened. Amendments to the *1997 Forest Plan* would not be pursued for this species as the aforementioned inconsistency is with a guideline rather than a standard.

Wyoming Natural Diversity Database Sensitive Species

Keeled Bladderpod

Under the Proposed Action the keeled bladderpod is expected to experience a range of impacts. These impacts could be separated into heavy disturbance, moderate disturbance, or light disturbance.

Heavy disturbance totally eliminates occupied and suitable habitat. It can be characterized as building installation, trenches for utilities or snowmaking, lift tower installation, rock blasting, etc. Impacts from heavy disturbance could eliminate suitable habitat and plant cover due to removal of the top layer of soil and soil compaction. It has been observed that vegetation recovery is slow and limited following construction of ski runs. The plant communities can be less dense and less diverse following the disturbance.²²³ During the 2019 field surveys this was observed along graded or heavily compacted areas, as no sensitive plants were present in these areas. Refer to **Table 3.12-9** for more information.

Moderate disturbance is fairly likely to reduce plant vigor in the short and long-term and would degrade suitable habitat. It can be characterized by tree clearing, glading, constructing temporary access routes, travel of low-impact machinery, etc. Tree removal can cause snow and soil compaction, but impacts would be limited as most tree clearing would occur over the snow (refer to **Table 2.4-1**). Even though there are PDC to limit impacts to snow and soil compaction, over-snow timber removal can compact soil if the soil is not frozen to at least 7 cm.²²⁴ This snow compaction and soil compaction could alter

²²² USFWS 2018

²²³ Urbanska 1997

²²⁴ Sutherland 2003

snowmelt duration, soil moisture and ultimately plant composition.²²⁵ Refer to **Table 3.12-10** for more information.

Lighter disturbance can reduce plant vigor over time and reduce suitable habitat over the long-term. Light disturbance can occur as the result of snow grooming, increased skier activity, increased hiking or biking, and snowmaking. Many actions described as being light disturbance would gradually degrade habitat and plant vigor over the long-term. It was observed that the keeled bladderpod does persist in lightly disturbed areas like hiker trampling or occasional biking. Changes in the hydrologic function and soil changes as a result of soil or snow compaction would cause a mild short-term effect to plant health and presence. Refer to **Table 3.12-11** for more information.

Table 3.12-9. Impacts to Keeled Bladderpod Under the Proposed Action as a Result of Heavy Disturbance

EO Nickname	Existing Condition	Heavy Disturbance Proposed	Effects to Each Occurrence
Dreamcatcher Summit	7.3 acres	Grading with some tree clearing: 0.77 acre	Loss of 11% of occupied habitat due to grading
		Within 50 feet of occurrence, grading for trails and roads: 1.04 acres	Loss of 1.04 acres of habitat adjacent to occurrence
Top of Blackfoot	3.2 acres	Grading with some tree clearing: 1.05 acres	Loss of 33% of occupied habitat due to grading, including 56% of one subpopulation
		Within 50 feet of occurrence, grading for trails and roads: 1.13 acres	Loss of 1.13 acres of suitable habitat adjacent to occurrence, mostly on ridge near lift terminal
Top of Peaked	0.25 acres	Grading and installation of chairlift terminal: 0.18 acre	Loss of 72% of occupied habitat and possibly viability of population and loss of 0.28 acre of adjacent potentially suitable habitat

²²⁵ Fahey and Wardle 1998

		Within 50 feet, grading for buildings and lifts: 0.28 acre	Long term habitat degradation due to snow compaction from skiers near lift in remaining 28% of occupied habitat
Peaked South Slope	1.3 acres	Within 50 feet, grading and tree clearing for ski trails: 0.02 acre	20% of occupied habitat impacted by tree clearing
Peaked Chairlift	1.3 acres	Grading for road enlargement: 0.05 acre	Loss of 4% of occupied habitat
		Within 50 feet, grading for road enlargement: 0.1 acre	Loss of 0.1 acre of adjacent, likely suitable habitat
Sacajawea Cliff	1.3 acres	Grading for summer trail: 0.09 acre	Loss of 7% of occupied habitat
		Within 50 feet, grading for summer trail: 0.03 acres	Loss of 0.03 acre of adjacent, likely suitable habitat

Table 3.12-10. Impacts to Keeled Bladderpod Under the Proposed Action as a Result of Moderate Disturbance

EO Nickname	Existing Condition	Moderate Disturbance Proposed	Effects to Each Occurrence
Dreamcatcher Summit	7.3 acres	Tree clearing over snow or via helicopter: 0.51 acre	Reduced vigor and habitat quality in 7% of occupied habitat
Top of Blackfoot	3.2 acres	Glading and tree clearing over snow or via helicopter: 0.42 acre	Reduced vigor and habitat quality in 13% of occupied habitat
Peaked South Slope	1.3 acres	Tree clearing: 0.25 acre	3 of 4 subpopulation 44 – 100% impacted by tree clearing and potential habitat degradation due to increased backcountry skiing and snow compaction

Peaked Chairlift	1.3 acres	Grading: 0.05 acres	Long term degradation of 4% of occupied habitat that is 66% of one subpopulation
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Table 3.12-11. Impacts to Keeled Bladderpod Under the Proposed Action as a Result of Light Disturbance

EO Nickname	Existing Condition	Light Disturbance Proposed	Effects to Each Occurrence
Dreamcatcher Summit	7.3 acres	Increased ski trail grooming, winter and summer activity	Long term mild habitat degradation in approximately 50% of occupied habitat
Top of Blackfoot	3.2 acres	Increased grooming, winter and summer activity	Long term mild habitat degradation in approximately 25% of occupied habitat
Top of Peaked	0.25 acre	Substantial increase in winter activity in remaining occupied habitat	Potential to reduce recruitment to other occurrences at lower elevations
Peaked Chairlift	1.3 acres	Increased grooming and summer and winter activity	Long term degradation of 4% of occupied habitat that is 66% of one subpopulation

Overall, as a result of the Proposed Action there would be a 9 percent loss of total occupied habitat; a loss of approximately 10 percent of adjacent habitat (may or may not be suitable); the most vigorous occurrence could be 75 percent eliminated due to grading, with a possible loss of source population for other occurrences; the Blackfoot occurrence would be 1/3 eliminated; and all occurrences of keeled bladderpod would be adversely impacted. Additionally, as a result of the Proposed Action it is estimated that approximately there would be a 25 percent loss of viability of the keeled bladderpod in the project area, which constitutes a 6 percent loss of viability to the plant in Wyoming. Therefore, the Proposed Action may affect, and is likely to adversely affect the keeled bladderpod.

Brightgreen Spleenwort

Under the Proposed Action, brightgreen spleenwort could be directly impacted by grading and rock blasting. Specifically, proposed grading within the occupied habitat of brightgreen spleenwort comprises 0.012 acre, which totals 33 percent of the occurrence. Grading would cause elimination of approximately 1/3 of the population and occupied habitat of the brightgreen spleenwort. Additionally, most all of the occupied and suitable habitat could be lost during rock blasting that would likely be needed to grade a

road. As a result of this, the viability of the occurrence would substantially decrease and the occupied habitat of this plant may be entirely eliminated. The loss of this habitat would have a negligible effect on global viability and a small effect on the viability in Wyoming. Therefore, the Proposed Action may affect, and is likely to adversely affect the brightgreen spleenwort.

Forest Service Region 4 Sensitive Species

Payson's Bladderpod

Due to similar habitat types, under the Proposed Action, the Payson's bladderpod is anticipated to have similar impacts to the keeled bladderpod. Even though the Payson's bladderpod was not observed during the 2019 field surveys, there is a possibility that projects under the Proposed Action could impact the population at the top of Dreamcatcher lift if it is still existing. Impacts experienced from an increase in skier activity and summer recreationists could occur. This could lead to snow and soil compaction, which would impact the hydrologic and soil function of the project area. Increases of summer visitation could also lead to increases in trampling by hikers and bikers. These impacts could inhibit the growth and revegetation of the disturbed areas. Under the Proposed Action, Payson's bladderpod may be affected, but is not likely to be adversely affected by the projects.

Old Growth

Under the Proposed Action there is expected to be minimal direct impacts to late seral and old growth stands. Impacts to old growth and late seral stage stands could occur from grading and tree clearing within the existing and proposed SUP area. The following **Table 3.12-12** summarizes the potential impacts to old growth and late seral stage stand composition within TPW 19 and TPW 20 based on the different existing and reliable data sets used to analyze this resource.

Table 3.12-12. Estimated Percentage of Late Seral and Old Growth Within TPW19 and TPW 20

TPW Analyzed and Organization	Existing Percentage of Late Seral and Old Growth (%)	Percent Decrease based on Proposed Project Impacts	Percentage of Late Seral and Old Growth (%) under Proposed Conditions
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth	25.7	0.7	25
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.7	0.2	21.5
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth	28.9	0.2	28.8
Percent Forested Acres in TPW20 in Late Seral/Potential Old	21.3	No Impacts	21.3

Growth in 300-acre Forest Blocks			
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Note: There are no impacts to the percent of Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks because when merged and parsed into 300-acre polygons, there were not any late seral and old growth areas that met the qualifications within the existing SUP in TPW 20.

Table 3.12-12 indicates that estimated impacts to the threshold of late seral and old growth vegetation are limited, changing by less than a percent across all data modeling scenarios. The Proposed Action is consistent with Guideline #6 of the *1997 Forest Plan*, as the 20 percent or more threshold of old growth and late seral stands within the study area TPWs would be maintained or negligibly impacted under all modeling scenarios, utilizing the best available existing and reliable data.

Noxious Weeds and Invasive Species

Under the Proposed Action, the existing populations of noxious weeds could potentially spread into the expanded South Bowl and Mono Trees proposed SUP areas. Noxious weeds and invasive species could also increase in density and abundance within the existing SUP. The greatest risk to noxious weed and invasive species seed dispersal occurs when ground disturbing activities takes place in mid to late summer. Noxious weeds and invasive species are producing seeds at this time and transport via motor vehicles, horses, bikes, and other forms of transport is more likely. Specifically, if grading activities or other ground disturbing activities occur in weed infested areas when weeds are actively producing seed, the seeds could potentially be transported to other sites via soil or plant parts embedded on construction vehicles. Additionally, construction personnel have the potential to transport seeds if seeds become attached to clothing, to other non-infested areas of the project area.

Furthermore, changes in temperature and precipitation have the potential to enhance the spread of noxious weeds and invasive species throughout the project area. This has the potential to intensify the competition among native plants and weeds and could create an increased risk for weed spread where they do not already exist.

Reducing the threat of weed spread and managing existing weed populations hinges on the implementation of management measures such as those outlined in **Table 2.4-1**. Specifically, through the establishment of the Noxious Weed Management Plan, the spread and establishment of noxious weeds and invasive species within the project area would be limited. The main elements of this Plan includes: 1) pretreatment of existing infestations; 2) cleaning all off-road and construction equipment; 3) revegetation with Forest Service approved seed mixes that are certified noxious weed free; 4) use of Forest Service approved weed free mulches; and 5) monitoring and treatment of the project area for three years.

Overall, given the specific PDC included within the project and under the Proposed Action, Executive Order 13112 would be maintained.

ALTERNATIVE 3 – NO SUP EXPANSION

Threatened and Endangered Species

Whitebark Pine

Under Alternative 3, impacts to WBP would be similar as experienced under the Proposed Action, however, less intensive given no SUP expansion. A total of approximately 59.33 acres of WBP would be impacted by Alternative 3 (refer to **Table 3.12-13**). Similarly, approximately 174 individual trees or small

stands would be impacted by glading, and 181 trees or small stands would be impacted by grading and tree clearing (refer to **Table 3.12-14**). Additionally, approximately 37 acres of low density WBP and approximately 22 acres of mid to high density WBP, for a total of approximately 59 acres that would be impacted under Alternative 3 (refer to **Table 3.12-15**). Finally, zero cone-bearing individuals or small stands, approximately 175 non-cone-bearing individuals or small stands, and 180 mixed individuals or small stands, for a total of 355 individual trees or small stands that would be impacted under Alternative 3 (refer to **Table 3.12-16**). Specific PDC would be implemented in order to mitigate the impacts to WBP within the existing SUP.

Table 3.12-13. Estimated Impacts to Areas of WBP Under the Proposed Action

Alternative	Potential Impacts to WBP Areas (acres)			
	Existing SUP	South Bowl	Mono Trees	Total
Alternative 3 – No SUP Expansion	59.33	0	0	59.33

Table 3.12-14. Estimated Impacts by Disturbance Type to WBP Individuals and Small Stands Under the Proposed Action

Estimated Density (tree/acre)	Methodology	Potential Impacts to WBP Surveyed Trees (individuals and small stands)
Glading (40 percent Tree Removal)		174
Glading (40 percent tree removal)	GPS & Binocular Surveys	154
Groomable Glades (40 percent tree removal)	GPS & Binocular Surveys	20
Grading and Tree Clearing (100 percent tree removal)		181
Grading	GPS & Binocular Surveys	37
Grading and Tree Clearing	GPS & Binocular Surveys	106
Tree Clearing	GPS & Binocular Surveys	38
Total		355

Table 3.12-15. Estimated Density of Impacted WBP Under the Proposed Action

Estimated Density (tree/acre)	Methodology	Area (acres)
Low Density WBP		37.42
1-5	GPS & Binocular Surveys	36.32
Likely few WBP (estimated <5)	Not Surveyed - Aerial Imagery & GIS Analysis	1.10
Mid to High density WBP		21.91
5-10	GPS & Binocular Surveys	11.93
10-25	GPS & Binocular Surveys	5.32
25+	GPS & Binocular Surveys	0.04
Likely some WBP (estimated 5-10)	Not Surveyed - Aerial Imagery & GIS Analysis	4.62
Likely many WBP (estimated 10+)	Not Surveyed - Aerial Imagery & GIS Analysis	0.00
Total		59.33

Table 3.12-16. Estimated Impacts to Different Types of WBP Individuals and Small Stands Under the Proposed Action

Alternative	Methodology	Potential Impacts to WBP Surveyed Trees (individuals and small stands)
Cone-bearing	GPS & Binocular Surveys	0
Non-Cone Bearing	GPS & Binocular Surveys	175
Mixed	GPS & Binocular Surveys	180
Total		355

PDC would mitigate the impacts on WBP under Alternative 3. As a result of these measures and the analysis contained in this section, the Alternative 3 is in consistent with Plant Species Diversity Standard

1, as described in **Section 3.12.2**. Similar to the Proposed Action, Alternative 3 would not meet the intent of Vegetation Guideline 8, as described in **Section 3.12.2**. This is due to the direct impacts to WBP habitat that would occur under this alternative; however, at the scale of the *1997 Forest Plan* area, WBP population viability would not be threatened. Amendments to the *1997 Forest Plan* would not be pursued for this species as the aforementioned inconsistency is with a guideline rather than a standard.

Wyoming Natural Diversity Database Sensitive Species

Keeled Bladderpod

Under Alternative 3, impacts to the keeled bladderpod would be similar to those anticipated under the Proposed Action; however, impacts would be less overall. As Alternative 3 only involves expansion and development within GTR's existing SUP, the most vigorous occurrence of keeled bladderpod would be preserved. Additionally, there would be no effect to the EOs at the top of Peaked and on the Peaked south slope. Therefore, the determination of may affect likely to adversely affect was reached for this species.

Brightgreen Spleenwort

Under Alternative 3, impacts to brightgreen spleenwort would be similar to those anticipated under the Proposed Action. There would still be a potential for a third of the occupied habitat to be diminished as a result of grading and rock blasting. Overall, the viability of the plant would substantially decrease, and the occupied habitat may be entirely eliminated. Therefore, the determination of, may affect, likely to adversely affect was reached for this species.

Forest Service Region 4 Sensitive Species

Payson's Bladderpod

Under Alternative 3, impacts to Payson's bladderpod would be similar to those anticipated under the Proposed Action. There is still potential for an increase in snow and soil compaction that could alter the hydrologic and soil function of the project area. This would lead to a decrease in the viability of the plant. As a result, it was determined that Alternative 3 may affect but is unlikely to adversely affect the Payson's bladderpod.

Old Growth

Under Alternative 3, impacts to late seral and old growth would be less than those anticipated under the Proposed Action. Impacts would occur from grading and tree clearing in order to expand ski runs and replace chairlifts within the existing SUP area. As Alternative 3 does not include expansion into the proposed South Bowl and Mono Trees areas, there would be less impacts anticipated to late seral and old growth forests overall. The following **Table 3.12-17** summarizes the potential impacts to old growth and late seral stage stand composition under Alternative 3 within TPW 19 and TPW 20 based on the different data sets used to analyze this resource.

Table 3.12-17. Estimated Percentage of Late Seral and Old Growth Within TPW19 and TPW 20

TPW Analyzed and Organization	Existing Percentage of Late Seral and Old Growth (%)	Percent Decrease based on Proposed Project Impacts	Percentage of Late Seral and Old Growth (%) under Proposed Conditions
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth	25.7	0.6	25.1
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.7	0.1	21.6
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth	28.9	0.2	28.8
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.3	No Impacts	21.3

Note: There are no impacts to the percent of Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks because when merged and parsed into 300-acre polygons, there were not any late seral and old growth areas that met the qualifications within the existing SUP in TPW 20.

Table 3.12-17 indicates that estimated impacts to the threshold of late seral and old growth vegetation under Alternative 3 are limited, changing by less than a percent across all data modeling scenarios. Alternative 3 is consistent with Guideline #6 of the *1997 Forest Plan*, as the 20 percent or more threshold of old growth and late seral stands within the study area TPWs would be maintained or negligibly impacted under all modeling scenarios, utilizing the best available data.

Noxious Weeds and Invasive Species

Under Alternative 3 the spread of noxious weeds and invasive species would be similar to that anticipated under the Proposed Action. However, impacts would be less as there would not be development and disturbance within the South Bowl and Mono Trees expansion areas. Weed seeds would still have the potential to be transported via construction equipment and other forms like clothing, horses, bikes, etc. Establishment of these seeds would occur where recent ground disturbance is expected to occur. Similar to the Proposed Action, under Alternative 3, specific PDC would be implemented to prevent the transport and establishment of seeds within the existing SUP area. PDC like the Noxious Weed Management Plan would also help control infestations within the existing SUP area. Under Alternative 3, Executive Order 13112 would be maintained.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Threatened and Endangered Species

Whitebark Pine

Under Alternative 4, impacts would be similar to those anticipated under the Proposed Action. Given most WBP are located within the South Bowl expansion area and at high elevations within the existing SUP, both the Proposed Action and Alternative 4 would have the same impact on WBP within the project area. Although acres of impacted WBP are similar under the Proposed Action and Alternative 4, only approximately 454 individual trees, two less mixed cone-bearing trees than the Proposed Action, would be impacted by Alternative 4, as compared to the 456 individuals potentially impacted by the Proposed Action. This is due to no expansion within the Mono Trees area.

Under Alternative 4, PDC would mitigate the impacts on WBP within the existing SUP and proposed South Bowl area. As a result of these measures and the analysis contained in this section, Alternative 4 is consistent with Plant Species Diversity Standard 1, as described in **Section 3.12.2**. Similar to other action alternatives, Alternative 4 would not meet the intent of Vegetation Guideline 8, as described in **Section 3.12.2**. This is due to the direct impacts to WBP habitat that would occur under this alternative; however, at the scale of the *1997 Forest Plan* area, WBP population viability would not be threatened. Amendments to the *1997 Forest Plan* would not be pursued for this species as the aforementioned inconsistency is with a guideline rather than a standard.

Forest Service Region 4 Sensitive Species

Payson's Bladderpod

The potential impacts to Payson's bladderpod would be similar to those anticipated under the Proposed Action. The Payson's bladderpod would be affected but is not likely to be adversely affected under Alternative 4. Refer to the Proposed Action discussion for this species for more information.

Wyoming Natural Diversity Database Sensitive Species

Keeled Bladderpod

Under Alternative 4, potential impacts to keeled bladderpod would be similar to those anticipated under the Proposed Action. The most vigorous occurrence of the plant would be eliminated under Alternative 4. As the result of grading, tree clearing, and an increase in summer and winter visitation, snow and soil compaction along with trampling of plants would occur. This would alter the hydrologic function and soil properties within the project area, thus inhibiting the regeneration and viability of the species in the project area. Therefore, a determination of may affect, likely to adversely affect the keeled bladderpod has been reached.

Brightgreen Spleenwort

Under Alternative 4, the brightgreen spleenwort is anticipated to be impacted similarly to the Proposed Action. Given its habitat type and existence within cliffs and crevices, rock blasting and grading to construct a road would directly impact the viability of this species. Therefore, the determination of may affect, likely to adversely affect for the brightgreen spleenwort has been determined. Refer to the Proposed Action discussion for more information.

Old Growth

Under Alternative 4, impacts to late seral and old growth forest stands would be similar to those anticipated under Alternative 3 as there is no expansion into the Mono Trees proposed SUP area. The following **Table 3.12-18** summarizes the potential impacts to old growth and late seral stage stand composition within TPW 19 and TPW 20 under Alternative 4 based on the different data sets used to analyze this resource.

Table 3.12-18. Estimated Percentage of Late Seral and Old Growth Within TPW19 and TPW 20

TPW Analyzed and Organization	Existing Percentage of Late Seral and Old Growth (%)	Percent Decrease based on Proposed Project Impacts	Percentage of Late Seral and Old Growth (%) under Proposed Conditions
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth	25.7	0.6	25.1
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.7	0.1	21.6
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth	28.9	0.2	28.8
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.3	No Impacts	21.3

Note: There are no impacts to the percent of Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks because when merged and parsed into 300-acre polygons, there were not any late seral and old growth areas that met the qualifications within the existing SUP in TPW 20.

Table 3.12-18 indicates that estimated impacts to the threshold of late seral and old growth vegetation under Alternative 4 are limited, changing by less than a percent across all data modeling scenarios. Alternative 4 is consistent with Guideline #6 of the *1997 Forest Plan*, as the 20 percent or more threshold of old growth and late seral stands within the study area TPWs would be maintained or negligibly impacted under all modeling scenarios, utilizing the best available data.

Noxious Weeds and Invasive Species

Impacts to the transport and establishment of noxious weeds and invasive species under Alternative 4 would be similar to those anticipated under the Proposed Action, but more intensive than what is anticipated under Alternative 3. Weeds would most likely be transported and established within the proposed South Bowl proposed expansion. Establishment of these seeds would occur in places where recent ground disturbance is proposed to occur. Similar to the Proposed Action a Noxious Weed

Management Plan, along with other PDC would be implemented to prevent the further spread of noxious weeds and invasive species within the existing and proposed SUP area.

ALTERNATIVE 5 – MONO TREE, NO SOUTH BOWL

Threatened and Endangered Species

Whitebark Pine

Under Alternative 5, impacts are anticipated to be similar as experienced under Alternative 3. Given there are very limited numbers of WBP within the Mono Trees expansion area, Alternative 5 has the potential for similar impacts to WBP as Alternative 3. There would be two more mixed cone-bearing trees that are impacted by Alternative 5, as compared to Alternative 3. Approximately 357 individual trees and small stands would be impacted by Alternative 5, as compared to 355 trees under Alternative 3.

Under Alternative 5, PDC would mitigate the impacts on WBP within the existing SUP and proposed Mono Trees area. As a result of these measures and the analysis contained in this section, Alternative 5 is consistent with Plant Species Diversity Standard 1, as described in **Section 3.12.2**. Similar to other action alternatives, Alternative 5 would not meet the intent of Vegetation Guideline 8, as described in **Section 3.12.2**. This is due to the direct impacts to WBP habitat that would occur under this alternative; however, at the scale of the *1997 Forest Plan* area, WBP population viability would not be threatened. Amendments to the *1997 Forest Plan* would not be pursued for this species as the aforementioned inconsistency is with a guideline rather than a standard.

Wyoming Natural Diversity Database Sensitive Species

Keeled Bladderpod

Impacts to the keeled bladderpod under Alternative 5 would be similar to those anticipated under Alternative 3. As there is less expansion and no expansion into the South Bowl area proposed under this Alternative, the occurrences at the top of Peaked and on the south slope of Peaked would be maintained. Additionally, the most vigorous occurrence of the species would be maintained as well. Even though impacts are less than those anticipated under the Proposed Action, the keeled bladderpod would still be affected and have the likelihood of being adversely affected under Alternative 5. Refer to the Proposed Action discussion for this species for more information.

Brightgreen Spleenwort

Under Alternative 5, impacts to the brightgreen spleenwort would be similar to those anticipated under the Proposed Action. There would still be the potential for soil and snow compaction, which could inhibit the viability of the plant in both the short and long-term. Under Alternative 5, the brightgreen spleenwort would be affected with the likelihood of being adversely affected. Refer to the Proposed Action discussion previously for more information.

Forest Service Region 4 Sensitive Species

Payson's Bladderpod

Similar to the other three action alternatives, Alternative 5 could impact Payson's bladderpod. Due to the anticipated increase in both summer and winter visitation along with the continuation of operations at the ski area, trampling of plants and soil and snow compaction could occur. This could inhibit the growth and

viability of the plant in both the short and long-term. Therefore, under Alternative 5, the Payson's bladderpod may be affected but is not likely to be adversely affected.

Old Growth

Under Alternative 5, impacts to late seral and old growth would be similar to those anticipated under the Proposed Action; however, to a lesser extent. Since expansion into the Mono Trees area is proposed under this alternative, there would be more impacts than those anticipated under Alternative 4. The following **Table 3.12-19** summarizes the potential impacts to old growth and late seral stage stand composition within TPW 19 and TPW 20 based on the different data sets used to analyze this resource.

Table 3.12-19. Estimated Percentage of Late Seral and Old Growth Within TPW19 and TPW 20

TPW Analyzed and Organization	Existing Percentage of Late Seral and Old Growth (%)	Percent Decrease based on Proposed Project Impacts	Percentage of Late Seral and Old Growth (%) under Proposed Conditions
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth	25.7	0.6	25
Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.7	0.2	21.5
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth	28.9	0.2	28.8
Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.3	No Impacts	21.3

Note: There are no impacts to the percent of Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks because when merged and parsed into 300-acre polygons, there were not any late seral and old growth areas that met the qualifications within the existing SUP in TPW 20.

Table 3.12-19 indicates that estimated impacts to the threshold of late seral and old growth vegetation under Alternative 5 are limited, changing by less than a percent across all data modeling scenarios. Alternative 5 is consistent with Guideline #6 of the *1997 Forest Plan*, as the 20 percent or more threshold of old growth and late seral stands within the study area TPWs would be maintained or negligibly impacted under all modeling scenarios, utilizing the best available data.

Noxious Weeds and Invasive Species

Under Alternative 5 the risk of transport and establishment of noxious weeds and invasive species would be similar to what is anticipated under the Proposed Action. However, impacts would be to a lesser extent

as there would not be expansion into the South Bowl proposed SUP. Similar to all other action alternatives weed seeds could be transported via motorized equipment, along with horses, bikes, and personnel's clothing. These seeds would establish themselves in areas that recently experienced ground disturbance. Just as under the other action alternatives, specific PDC would be implemented to prevent the transport and establishment of seeds, along with enhancing the control of species.

3.12.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. Projects identified in **Appendix A** are expected to cumulatively have short- and long-term effects on the vegetation within the existing GTR SUP and proposed SUP, along with the TPW19 and TP20.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for vegetation resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis of vegetation resources include the existing SUP as well as the proposed expansion into South Bowl and Mono Trees and extends to nearby areas of NFS lands. These nearby NFS lands include the TPW19 and TPW20, where select projects could affect species composition and overall vegetation.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the DEIS. Past ski area, TNF, and other local or county projects have been incorporated and analyzed in this document as part of the Affected Environment discussion. Projects that could have cumulative impacts on vegetation are analyzed in the following discussion.

Whitebark Pine

Many of the projects identified previously are not expected to cumulatively impact WBP within the TPWs, except for the construction of the Colter Lift. Through the construction of the Colter Lift, removal of trees, and ongoing impacts from mowing and operation resulted in past and ongoing impacts to WBP. Both indirect and direct impacts in the form of soil compaction, loss of WBP saplings, and interrupted regeneration of WBP could occur. Although the construction of the Colter Lift had past and would have ongoing impacts to WBP, other projects assessed for cumulative impacts would not directly cause impacts to WBP. This is due to the species living at high elevations, and many of these projects occur at lower elevations. Over the long-term, the expected greatest threats to WBP include altered fire regimes, increases in temperature, shifts in precipitation, and disease. Specifically due to warming temperatures the distribution of WBP could become further limited; fire frequency and severity of fires could increase; and more favorable conditions for whitepine blister rust and mountain pine beetle could increase. Although these impacts are suspected to occur over the long-term, interagency collaborative efforts are increasing

and gaining more traction to conserve WBP.²²⁶ Overall impacts under the Action Alternatives would result in the loss of WBP; however, these losses would be minimal given the presence of WBP within the cumulative analysis area, TPWs, and total loss of the WBP population is not expected.

Old Growth

Cumulative impacts to late seral and old growth forests within the TPW 19 and TPW 20 would be similar to those impacts to WBP as described in the previous section. Through the construction of the past ski area projects, both removal of trees, along with operations and mowing has resulted in past impacts to late seral and old growth within the project area. Additionally, indirect impacts in the form of soil compaction and direct impacts of loss of new tree saplings has the potential to prohibit succession of species and thus the creation of late seral and old growth forests. In the long-term, due to the increase in temperature resulting in increased fire severity, late seral and old growth forests could become impacted by insects, disease, fires, and have a decrease in habitat availability. Furthermore, due to various forest health projects and decreasing the fuel load on the forest, some late seral and old growth trees could be removed. However, these projects would still have to be in adherence to the vegetation guideline of maintaining 20 percent or more late seral and old growth forest. Although there are expected to be both direct and indirect impacts to late seral and old growth forests, at a landscape level of 300-acre forest blocks, impacts are not expected to be cumulative and therefore not expected to contribute measurably to any larger trends occurring cumulatively.

Noxious Weeds and Invasive Species

Past, present, and reasonably foreseeable projects that have the potential to increase the transportation and establishment of noxious weeds and invasive species throughout the TPWs include future development projects, forest health projects, and continued maintenance and operation of GTR. Specifically, the Teton Canyon Hazardous Fuels Reduction Project has the potential to both increase and decrease the spread of invasive species throughout the Analysis Area. This fuels reduction project would mitigate the risk of a forest fire igniting and causing damage to GTR, thus decreasing the risk of a high intensity forest fire igniting and causing the enhanced transport and establishment of weeds. Through the implementation of this project, there would be a decrease in weed diversity and abundance as a lowered wildfire risk reduces the long-term risk of weed establishment and spread.²²⁷ Although there would be a decrease in weed spread due to the lowered risk of wildfire, through the process of mechanical thinning and prescribed burning weed diversity and abundance has the possibility of increasing. However, the project includes specific PDC to mitigate the spread of these noxious weeds and invasive species. Therefore, this fuels project increases the risk of transport and establishment of noxious weeds and invasive species within the cumulative analysis area. Overall, these ongoing and foreseeable activities would increase the potential for weed establishment and spread within the Analysis Areas, but also allow for better control and detection of weeds. The net effect may vary over time, with more spread or more control occurring depending on project statuses. Noxious weeds can be expected to slowly increase in extent and density, with the rate of spread mitigated by enhanced weed management.

²²⁶ Keane et al 2017

²²⁷ Keeley et al. 2003

Wyoming Natural Diversity Database Sensitive Species and Forest Service Region 4 Sensitive Species

Past and ongoing projects that have the potential to impact keeled bladderpod, brightgreen spleenwort, and Payson's bladderpod include improvements and maintenance at GTR, along with forest health projects and other development projects within the TPW 19 and TPW 20. Activities that occurred for the implementation of the Colter Lift resulted in past and ongoing impacts to the species, including possible reduction of plant abundance and degradation of suitable habitat due to new lift and trail development. Additionally, forest health projects and activities like timber harvesting, forest thinning, and prescribed burning could have adverse impacts on the species. Trampling and crushing of species by machinery, grading, and tree clearing for road construction could eliminate occupied habitat. Additional projects and activities like livestock grazing and increases in recreational use could cause both direct and indirect impacts in the form of removal or soil compaction. Overall, the action alternatives would slightly contribute to these adverse cumulative effects.

3.12.6 Irreversible and Irretrievable Commitments of Resources

The further development and expansion of GTR's SUP area, including the addition of ski trails, lifts, and associated infrastructure would represent irretrievable effects, as ground disturbance would impact the vegetation on the landscape. Overstory removal and impacts to vegetation, however, is not considered irreversible given timber and plant species are renewable in the long-term.

3.13 Wildlife

3.13.1 Scope of Analysis

This analysis summarizes the *Grand Targhee Master Development Plan Projects Biological Assessment* (Wildlife BA), and the *Grand Targhee Master Development Plan Projects Wildlife Biological Evaluation* (Wildlife BE), both of which are available on the [project website](#).²²⁸ Species included in this analysis were identified as *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species*, and/or Species of Local Concern (SOLC). Species information, their habitat within the project area, and potential to be affected by the proposed projects are described in the following sections.

3.13.2 Federal, State, and Local Policy and Guidance

ENDANGERED SPECIES ACT

Forest Service policy requires a review of programs and activities to determine their potential effects on *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species*. Under the ESA, the effects analysis report is called a BA and must be prepared for federal actions that are "major construction activities" to evaluate the potential effects of the proposal on listed or proposed species and critical habitats.

The documentation herein conforms to legal requirements set forth under section 7 of the ESA (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14). Section 7(a)(1) of the ESA requires federal agencies to use their authorities to further the conservation of listed species. Section 7(a)(2) requires that federal agencies

²²⁸ Alder Environmental 2023 h, g

ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of federally listed species, or destroy or adversely modify designated critical habitat.

MIGRATORY BIRD TREATY ACT

A Memorandum of Understanding (MOU) was signed by the Forest Service with the USFWS to promote the conservation of migratory birds. The Migratory Bird Treaty Act prohibits the killing, capture, “take”, or otherwise harming of birds listed as migratory. Migratory birds, as well as their nests and eggs, are protected by the Migratory Bird Treaty Act, including songbirds, waterfowl, raptors, and shorebirds. Birds of Conservation Concern are identified for Bird Conservation Regions in a list published and maintained by the USFWS, Division of Migratory Bird Management.²²⁹ The CTNF is located within the Northern Rockies Bird Conservation Region (BCR 10). Partners in Flight (PIF) also published a watch list of Species of Continental Concern for the Continental United States and Canada.²³⁰

NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION AMENDMENT

In 2000, the USFWS listed the Canada lynx as a threatened species, and in 2001 the Forest Service signed a Lynx Conservation Agreement with the USFWS to consider the Lynx Conservation Assessment and Strategy (LCAS). As a result, the Northern Rockies Lynx Management Direction (NRLMD) was developed. Goals of the NRLMD are to incorporate management direction in land management plans that conserve and promote recovery of Canada lynx, by reducing or eliminating adverse effects from land management activities on NFS lands, while preserving the overall multiple-use direction in existing plans.

The Wildlife BA prepared for this project and summarized in this DEIS section, discloses information specific to analyzing projects under the NRLMD ROD.²³¹ The NRLMD ROD incorporated Goals, Objectives, guidelines, and standards into the existing plans of all National Forests in the Northern Rockies Lynx Planning Area. The aim is to help ensure that the appropriate information is used in the effects analysis and provided to the USFWS, thus streamlining consultations on NRLMD projects.

Under this decision, standards are applied only to vegetation management activities that have the potential to directly affect snowshoe hare prey and thus may impact lynx at the population level. Other activities that may have possible adverse effects on individual lynx are subject to guidelines. Any deviations from guidelines would be considered only after analysis of site-specific conditions, and in compliance with ESA Section 7 consultation requirements.

1997 FOREST PLAN DIRECTION

The *1997 Forest Plan* provides a number of relevant Standards and Guidelines that were considered for the various species included in this wildlife analysis. Specifically, this includes the following standards and guidelines:

- Forest-Wide Snag/Cavity Nesting Habitat Standards and Guidelines (Pages 111-16 and 111-17)
- Management Prescription 2.8.3 – *Aquatic Influence Zone* Wildlife Guideline (Page 111-109)
- Grizzly Bear Standards and Guidelines (Pages 111-17 and 111-18)

²²⁹ USFWS 2021

²³⁰ Rosenberg et al. 2016

²³¹ USDA Forest Service 2007

- Bighorn Sheep Standards and Guidelines (Teton Range subsection (M33 1Db))
- Great Gray Owl Habitat Standards (Page 111-22)
- Boreal Owl Habitat Standard and Guideline (Page 111-21)
- Flammulated Owl Habitat Standard (Page 111-21)
- American Goshawk Standards and Guidelines (Page 111-20 and 111-21)
- Peregrine Falcon Habitat Standards and Guideline (Page 111-20)
- Yellowstone Cutthroat Trout Guideline 3 (Page 111-11)

All of these standards and guidelines can be reviewed in **Appendix B. The 1997 Forest Plan** consistency in the context of project-related impacts is discussed in the following **Section 3.13.4**. For each of the standards and guidelines cited in the list, the corresponding species sub-heading under **Section 3.13.4** contains a discussion of the project's adherence to relevant *1997 Forest Plan* direction or need for amendments to the *1997 Forest Plan*.

FOREST SERVICE MANUALS

It is the objective of the Forest Service to develop and implement practices that ensure species do not become threatened or endangered because of Forest Service Actions (FSM 2670.22). To achieve this objective, the Regional Forester has identified a list of sensitive animal species for which population viability is a concern (FSM 2672). The Regional Forester's list, updated in June 2016, has been edited to include species that have the potential to occur in the CTNF, and is analyzed in detail under the *Forest Service Region 4 Sensitive Species* sub-heading that is contained within the following **Section 3.13.3** and **Section 3.13.4**. It should be noted that at the time of publication of this DEIS, the *Forest Service Region 4 sensitive species* list was under review and pending update; however, an updated list has not been published, and this analysis does not include new species under consideration as regionally sensitive as analysis was completed prior to those list updates. Any updates to sensitive species information will be included in the Final EIS publication, as applicable.

3.13.3 Affected Environment

An overview of the vegetative communities that make up GTR can be found in **Section 3.12** of this DEIS and are further described in the context of wildlife within the **Wildlife BA** and **Wildlife BE** that have been prepared for this project. The following discussion describes listed species with potential to occur in the project area, broken out by their listing status. Additional species were studied but determined not to have potential to occur within the project area. A complete discussion of all species considered in this analysis, including additional information on life history and baseline conditions within the broader region can be found in the **Wildlife BA** and **Wildlife BE**.

THREATENED AND ENDANGERED SPECIES

A list of *federally listed endangered, threatened, proposed, or candidate fish and wildlife species* was obtained for the action area from the USFWS's IPaC website on June 13, 2023. Additionally, *Forest Service Region 4 sensitive fish and wildlife species* were obtained for the action area from the Forest Service. Species/critical habitat with the potential to occur within the action area were determined using this list. Species with no potential of occurring within the action area are not included in the analysis. Rational for excluding these species is in the following **Table 3.13-1**.

Table 3.13-1. Threatened, endangered, proposed, and candidate wildlife species identified by IPaC for the proposed project and consideration for the analysis.

Species	Status	Typical Habitat	Suitable Habitat Present or Affected?	Rationale if not carried forward for analysis
Mammals				
<i>Canada Lynx (Lynx canadensis)</i>	Threatened	Spruce/fir and other high elevation forests with snowshoe hare present.	Yes	Carried forward
<i>Grizzly Bear (Ursus arctos horribilis)</i>	Threatened	Alpine/subalpine coniferous forest, lower elevation riparian areas in spring, lack of human disturbance.	Yes	Carried forward
<i>North American Wolverine (Gulo gulo luscus)</i>	Threatened	Alpine and subalpine forests with persistent spring snow cover	Yes	Carried forward
Birds				
<i>Yellow-billed Cuckoo (Coccyzus americanus)</i>	Threatened	Cottonwood/willow riparian habitat below 7,000 feet (Bennett & Keinath 2003).	No	Species' range is within open woodlands with dense riparian understory vegetation at elevations below 7,000 feet.
Insects				
Monarch Butterfly (<i>Danaus plexippus</i>)	Candidate	Milkweed, flowering plants and shrubs	Yes	Carried forward
Suckley's Cuckoo Bumble Bee (<i>Bombus suckleyi</i>)	Proposed Endangered	Relies on colonies of other <i>Bombus</i> species for breeding and native flowering plants for nutrition	No	Habitat and range for this species are under review by USFWS. Analysis is not required at this time but will be included if updates confirm potential presence.

Canada Lynx

The proposed project occurs within the Teton Creek and Badger Creek Lynx Analysis Units (LAUs).²³² Habitat for Canada lynx occurs within the proposed Mono Trees and South Bowl areas, and throughout the adjacent NFS lands outside the SUP Area. Only the topographically lowest, or westernmost, portion of the existing SUP Area provides lynx habitat. Site specific horizontal cover assessments were conducted in Mono Trees and South Bowl to quantify the effectiveness of mapped lynx habitat in these areas. Hare pellet plots were also utilized in both areas to provide a rough approximation of hare presence or absence.

The majority of the current GTR SUP Area (about 2,148 acres) is located within the Teton Creek LAU, with the approximate 2,148 acres totaling about 6.5 percent of the LAU. About 405 acres of the Badger Creek LAU overlaps the northern portion of the SUP Area. The 405 acres total less than one percent of the area encompassing the Badger Creek LAU.

All areas not mapped as lynx habitat on the CTNF are considered to be linkage areas for lynx. Many mountain ranges in the Rocky Mountain West support lynx habitat in a narrow band of forest bounded by agricultural hay meadows and residential development in the valley bottoms and by alpine ecosystems (which lynx avoid during winter) above timberline. Such is the case along the west side of the Teton Range where GTR is located. However, unlike many Rocky Mountain ski areas, GTR does not extend to the valley floor. Rather, the lowest elevation at GTR is separated from the valley floor by 2.5 miles of conifer that provides forage and travel habitat for lynx within the Teton Creek LAU. As a result, the SUP Area does not present the impediment to lynx travels that is present at many ski areas. Lynx desiring to avoid the SUP Area can simply shift their movements westward to avoid the ski area.

Within the operational boundary of the GTR SUP Area, effective lynx habitat has been fragmented by ski trail development; however suitable forested areas remain between ski trails in the lower portion of the resort that may be used by a lynx while traveling. Most of the forest stands within the operational boundary are skied throughout the winter. As a result of the disturbance by skiers, these stands are not likely to provide habitat suitable to meet life requisites for snowshoe hares. Therefore, it is not likely that an individual lynx would choose to forage within the SUP area in the winter.

The suitability of lynx habitat within the Mono Trees and South Bowl areas was examined using horizontal cover as the variable of interest. Lynx rely almost entirely on snowshoe hares as a food source, and thus are closely tied to boreal forests with high horizontal vegetation cover that provides habitat for snowshoe hares.²³³ The results of the survey demonstrated that overall lynx habitat throughout the Mono Trees and South Bowl areas is at the lower end of the functional range (horizontal cover value range 23-60, mean 36). Hare pellet counts in these two areas confirmed that hares are present in very low numbers. Further, given the existing habitat loss and fragmentation associated with the existing SUP area, the presence of skiers within and adjacent to the existing SUP has likely degraded the value of lynx habitat as foraging and security areas. The subsequent negative effects of winter skiing in the form of snow compaction, increased predator/competitor presence, and reduced hare habitat effectiveness, the existence of snowshoe hare presence is often reduced and may eventually be eliminated in some areas year-round

²³² Lynx Analysis Units approximate the size of an area used by an individual lynx and are the scale at which the effects of management activities are evaluated for lynx.

²³³ Squires et al 2010

due to ski area development.²³⁴ The area is at the lower end of the functional range for lynx and given existing use and low hare availability, foraging habitat quality is low. As a result, it is not likely that lynx would choose to forage in either of these areas; both areas do provide suitable cover for travelling lynx and are valuable as connective habitat. There is no USFWS designated critical wildlife habitat in the project area. Please refer to the **Wildlife Biological Assessment** for more information.

Grizzly Bear

The project area occurs within the Teton Bear Analysis Unit (BAU), which is entirely classified as occupied grizzly bear range.²³⁵ Approximately 3,282 acres of the Teton BAU (about 2 percent of the BAU) occurs within the project area. In total, 73 percent of the project area is currently non-secure habitat and 27 percent is secure habitat for grizzly bears. Within the two proposed expansion areas (Mono Trees and South Bowl), 516 acres are classified as secure and only 347 acres are classified as non-secure habitat. Approximately 60 percent of the secure grizzly bear habitat within the project area is located within the two proposed expansion areas. The CTNF is not mandated to manage for secure habitat as the project area is outside of the grizzly bear Recovery Zone; secure habitat is used solely for analysis purposes.

Documented occurrences of grizzly bears, detections, and human bear conflicts have occurred proximate to the project area. In addition to documented grizzly bear occurrences, grizzly bear tracks were documented by a wildlife ecologist at Alder Environmental while conducting pre-project fieldwork within and near the project area in 2019 and 2020. The grizzly bear in 2019 was likely transient based on movement patterns and the lack of additional grizzly bear sign in the area during several weeks of field surveys following the initial observation. The status of the grizzly bear associated with tracks observed in 2020 was not ascertained because the location was not revisited. There are no known denning or reproduction sites in or near the existing GTR SUP Area or the proposed expansion areas. The USFWS's proposed grizzly bear critical habitat does not include the project area or the vicinity.

Wolverine

The CTNF has tracked wolverine observations across the forest in their GIS database since 1998. In that time, wolverines have been documented within and adjacent to the SUP area and proposed expansion areas. Relevant observations include the following:

- Wolverine tracks were observed about a mile northwest of the project area in January 2009;
- A wolverine was sighted 0.3 miles west of the proposed Mono Trees expansion area on July 11, 2019, by two CTNF biologists;
- A wolverine was sighted in the Peaked Mountain area up slope from the Sacajawea Lift in February 2020;
- Fresh wolverine tracks were observed within the proposed Mono Trees expansion area on November 25, 2022; and
- A wolverine was sighted on Ski Hill Road on January 11, 2023.

²³⁴ USFWS 2013

²³⁵ Landenburger et al. 2017

Survey data from earlier studies also documented wolverines within and in the vicinity of the project area, which includes radio telemetry data collected between 1998-2005 and field survey data from 2004-2005. Detections from these two studies include wolverine occurrences in the Mono Trees proposed expansion area and in the existing SUP near the base of the resort.

Vegetation cover types in the existing SUP area, as well as in Mono Trees and South Bowl, are all considered to provide habitat for wolverines. The USFWS has not yet designated critical habitat for wolverines. The CTNF has created a GIS model of wolverine denning habitat across the forest. The model predicts denning habitat throughout the CTNF, including within the higher elevations of the existing SUP area where steep terrain, alpine meadows, boulders, and avalanche chutes are present. Approximately 477 acres of modeled wolverine denning habitat is mapped within the existing SUP area, although this habitat is not likely to be used for denning due to the noise and commotion associated with winter and summer recreation at GTR. Occasional wolverine sightings within the ski area are most likely individuals that are traveling through the ski area to access more suitable habitat, rather than denning or foraging within the SUP area. Wolverines are documented to avoid winter recreation sites and the landscape within the current SUP is not considered to be effective habitat.²³⁶ Within Mono Trees, 10.7 acres of denning habitat exists; within South Bowl, 104.7 acres of denning habitat exists. In totality, the existing SUP Area plus the two proposed expansion areas account for approximately 0.7 percent (593 acres) of the 87,248 acres of modeled denning habitat across the CTNF. A suspected wolverine den site was identified in 2020 about 0.5 miles east of the South Bowl expansion area.²³⁷

Monarch Butterfly

The western migratory monarch butterfly population has declined by more than 90 percent since the 1980s. The CTNF and Curlew National Grassland are within the northern tier of the western monarch butterfly breeding range. Requirements for monarchs to successfully breed and increase before migrating south to favorable wintering areas include native milkweed for egg and larval stages, as well as nectar sources, roosting structures, and connectivity between breeding sites for the adult monarchs.

Adult monarch butterflies tend to be generalist foragers on a variety of flowering forbs, shrubs, and trees for nectar resources, switching between genera depending on seasonal availability. Maintaining a diverse plant community for season-long nectar resources is one key to quality habitat. Late season flowering plants are crucial during fall migration.

Throughout the range of monarch butterflies, primary threats include habitat loss and degradation (conversion of grasslands to agriculture, widespread use of herbicides, logging/thinning at overwintering sites in Mexico, senescence, incompatible management of overwintering sites in California, urban development, and drought), exposure to insecticides, and changes in temperature and precipitation (Federal Register 2020). Further mediating western monarch population dynamics is its small population and widely scattered breeding habitats within an otherwise arid landscape.²³⁸

A 2-year systematic assessment of monarch butterfly and milkweed populations existence in Idaho and Washington was completed in 2016 and 2017.²³⁹ The assessment found that key monarch butterfly

²³⁶ Wildlife BE, Alder Environmental 2023g

²³⁷ Chris Kula, Palisades and Teton Basin Ranger District Wildlife Biologist, pers. comm. 2023

²³⁸ WAFWA 2019

²³⁹ Waterbury et al. 2019

breeding habitat sites exists in areas with moist-soils within grasslands, wetlands, deciduous forest, and shrub-steppe, with high density milkweed existing at elevations ranging from 2,198 to 5,532 feet in Idaho. Further the assessment found that milkweed was rarely found in cultivated cropland, bare rock/gravel, developed areas, pasture-hay, garden, mixed forest, or evergreen forest habitat types. Milkweed suitable to support breeding is not known to occur in the project area, though suitable nectar sources and roosting structures exist to support migrating/moving adult butterflies. Though milkweed specific surveys were not conducted during pre-project surveys, botanists did note observations of milkweed within the project area during plant and wildlife surveys during 2019. Records of plant observations including USFS databases, the Wyoming Natural Diversity Database, and the Monarch Milkweed Mapper supported by the Xerces Society do not document milkweed or monarch observations in the project area. Recorded observations of milkweed species in the region appear to generally occur at lower elevations than most of the terrain within the project area. It may be that the climate, soil conditions, moisture and elevations are not suitable in the project area to support substantial milkweed populations and monarch breeding. While not extremely common, milkweed does exist in the bottom of Teton Canyon, adjacent to the SUP Area.²⁴⁰

FOREST SERVICE REGION 4 SENSITIVE SPECIES

The CTNF sensitive species list includes five species of mammals, 12 species of birds, and 2 fish species. The species in the following **Table 3.13-2** were determined to have potential habitat in the project area and were carried forward for detailed analysis. It should be noted, that at the time of publication of this Draft EIS, newly updated *Forest Service Region 4 sensitive* species lists were published; however, this analysis does not include new species identified in those lists as analysis was completed prior to those list updates. These updates to sensitive species information will be included in the Final EIS publication.

Table 3.13-2. Region 4 Sensitive Species with Potential Habitat in Project Area

Species (<i>scientific name</i>)	Habitat Association
Mammals	
<i>Bighorn Sheep (Ovis canadensis)</i>	Alpine meadows, talus slopes, and rock outcrops (Beecham et al. 2007).
<i>Townsend's Big-Eared Bat (Corynorhinus townsendii townsendii)</i>	Xeric to mesic uplands including shrublands, woodlands, montane forests for foraging. Caves or cave-like structures for hibernaculum or maternity roosts (Gruver and Keinath 2006; WGFD 2017).
Birds	
<i>Great Gray Owl (Strix nebulosa)</i>	Spruce-fir, lodgepole pine, and other forests located near meadows or open areas for nesting (Franklin 1988, Bedrosian et al. 2015).
<i>Boreal Owl (Aegolius funereus)</i>	Subalpine fir and other mature coniferous forests (Hayward et al. 1993).

²⁴⁰ Chris Kula, Palisades and Teton Basin Ranger District Wildlife Biologist, pers. comm. 01-23-23

<i>Flammulated Owl (Psilosops flammeolus)</i>	Mature and old growth coniferous and mixed forests (Hayward and Verner 1994).
<i>American Goshawk (Accipiter atricapillus)</i>	Mature, old-growth or dense forest stands (Hayward and Escano 1989).
<i>Peregrine Falcon (Falco peregrinus anatum)</i>	Cliffs with open areas nearby for foraging (WGFD 2017).
<i>Three-toed Woodpecker (Picoides dorsalis)</i>	High elevation coniferous forests with dead and dying trees (Wiggins 2004).
Reptiles and Amphibians	
<i>Columbia Spotted Frog (Rana luteiventris)</i>	Waterbodies with stagnant or slow-moving water and shallow areas and emergent vegetation (Patla & Keinath 2005).
<i>Western Toad (Anaxyrus boreas boreas)</i>	Wetlands near other waterbodies and within less densely forested areas (Keinath and McGee 2005).
Fish	
<i>Yellowstone Cutthroat Trout (Oncorhynchus clarki bouvieri)</i>	Lakes, rivers, and small headwater streams with well-oxygenated waters (Gresswell 2009).
Insects	
Western Bumble Bee (<i>Bombus occidentalis</i>)	Diverse array of flowering plant species across a wide range of elevations and habitat types (Williams et al. 2014, Roof et al. 2018)

Source: Wildlife BE

Note: The monarch butterfly (*Danaus plexippus*) is a sensitive species, as well as a candidate for listing under ESA. As such, the species is discussed in the previous threatened and endangered Species subsection.

In addition to species described in **Table 3.13-2** that are known or expected to occur on the CTNF, a number were eliminated from detailed analysis. These include the species discussed in the following paragraphs.

Pygmy rabbits can be found in sagebrush steppe habitat with loose soils, and their distribution in Wyoming is in the southwest portion of the state, outside of the project area. Fishers occur in mesic forests with large trees and structural complexity, but their distribution is primarily north of Wyoming and outside of the project area. Range maps and distribution models from the Wyoming Natural Diversity Database indicate that spotted bats do not occur in the vicinity of the project area, and thus no surveys were conducted for spotted bats. Due to the habitat requirements and distributions of these three mammal species, they were not included for detailed analysis in the project area.

Four of the avian species, the bald eagle; trumpeter swan; common loon; and harlequin duck, are associated with aquatic habitats (e.g., rivers, lakes) that are not present within the project area such as large waterbodies, extensive wetlands, and larger perennial streams. The greater sage-grouse is a sagebrush shrubland obligate species; habitat is not present within the project area. The Columbian sharp-tailed grouse occurs in grassland and shrub communities in mountain foothills that are typical of elevations lower than the project area. The habitat requirements of these species are not met by vegetative cover types within the project area; therefore, they were eliminated from detailed analysis.

Two sensitive fish species are known to occur on the CTNF, one of these species is the northern leatherside chub. While this species utilizes lakes, ponds and small cool streams, their distribution is to the east and south of the Tetons, and outside of the project area. Therefore, this fish species was eliminated from detailed analysis for the proposed project.

Sensitive species with potential to occur within the project area are described in greater detail in the following paragraphs.

Big Horn Sheep

Bighorn sheep have been detected within the proposed South Bowl expansion area and habitat modeling suggests that the project area contains valuable winter and summer habitat. Game cameras were installed in and near the South Bowl area for the purpose of this project to survey for bighorn sheep and backcountry skier activity and several bighorn sheep were documented by photographs. One of the game cameras, located on the western side of South Bowl less than 400 feet from the existing resort boundary and the Colter Pod, captured motion-activated photographs of a bighorn sheep ram on November 4 and November 8, 2020. On May 11, 2021, a different camera 1,500 feet down slope to the east of the existing resort boundary, captured a ram on a timelapse photograph along steep rock outcroppings. The rock outcroppings were positioned too far from the game camera for motion to activate a photograph, so sheep use of this area might have been more frequent but not captured by camera footage. The captured photographs confirm bighorn sheep usage of the area during late fall/early winter and spring, when the ski area is not operating, and snow is thin. Additional detections of bighorn sheep in South Bowl were documented by GPS collar data during the summers of 2008 and 2009, reinforcing that the area provides valuable summer habitat for bighorn sheep.²⁴¹

Backcountry skiing currently occurs in the South Bowl area and may alter use of bighorn sheep habitat there and in the vicinity in the winter. Skiers can access the slopes of South Bowl from the current southern boundary of GTR or by skinning up from Teton Canyon. Game camera detections captured frequent backcountry skier activity within South Bowl and just east of South Bowl between December 2020 and April 2021. Photographs documented ski tracks in this area that persisted through most of the winter season between late November 2020 and mid-April 2021. Skier use was documented more frequently just east of the South Bowl expansion area and south of the Jedidiah Smith Wilderness boundary. Skier activity increased substantially in March when skiers were documented visiting the area once every few days. Backcountry skiing has increased in popularity in recent years and the uptick in winter recreation that has been documented in other parts of the Teton Range in the last few decades has likely influenced the western slopes of the Tetons too, including the South Bowl area and Teton Canyon. The construction of the previously approved Colter Lift in 2021-2022 is anticipated to influence

²⁴¹ WGFD 2013

recreational use patterns within southwest slopes of Peaked Mountain. Access to the area has not changed with the inclusion of the Colter Lift; however, there are now areas of higher and more concentrated use most proximate to the existing GTR SUP boundary. Use is not anticipated to increase further into the eastern extents of South Bowl and beyond as a result of the Colter Lift. The extent of changes in use patterns associated with this project are currently being studied. Game cameras were installed in the South Bowl expansion area in January of 2023 to monitor skier use and survey for bighorn sheep and land management agencies are strategizing additional monitoring efforts and management actions. Research suggests that Teton Range bighorn sheep avoid winter recreation routes even at low levels of intensity.²⁴² Bighorn sheep might, therefore, avoid using the South Bowl area for winter habitat given the existing and potentially increasing backcountry skiing activity. However, observations of sheep at Apostle Cliffs mineral lick in the winters of 2018 and 2022 indicate that bighorn sheep might travel through South Bowl even when backcountry skiing is intermittently occurring in the area.

Data also suggests that the South Bowl area is used as a movement corridor to access the Apostle Cliffs mineral lick, which is southwest of South Bowl on the north side of Teton Canyon.²⁴³ Bighorn sheep and other ungulates often use mineral licks to access nutrients that are lacking in their forage diet. The National Park Service has maintained three game cameras around the Apostle Cliffs mineral lick since 2017. This data indicates consistent, year-round usage of the mineral lick by bighorn sheep rams. GPS data from collared ewes, captured a collared ewe passing from the Apostle Cliffs mineral lick through the western and northern sections of South Bowl and into the JSW to the east. The mineral lick is positioned between the existing southern boundary of GTR and Teton Canyon which is heavily used by motorized and non-motorized recreationists. Therefore, to access the Apostle Cliffs mineral lick, bighorn sheep likely travel from the east along the south facing slopes above Teton Canyon which includes South Bowl, avoiding areas with heavy human activity. Bighorn sheep also select open areas with little tree cover where they can easily detect predators, and the South Bowl area is more open than the densely forested slopes below.²⁴⁴ These factors, and the observation data described previously, implicate South Bowl as an important movement corridor for bighorn sheep to access the Apostle Cliffs mineral lick.

There are five distinct populations of bighorn sheep found within the CTNF, the South Beaverhead herd, the South Lemhi herd, the Targhee herd (also called the Teton Range herd), Palisade herd, and Lionhead herd. The herd of bighorn sheep that occurs in the Teton Range is known as the Teton Range herd. This herd was historically part of a much larger bighorn sheep complex, but habitat fragmentation has isolated the herd. The Teton Range herd consists of two sub-herds, one occupying northern territory and the other in southern territory. Based on 2020 trend counts and DNA studies, the Teton Range herd population is estimated at between 125 and 175 individuals. The state of Wyoming recognizes the Teton Range herd as one of Wyoming's core, native herds, defined by its ability to persist without augmentation from outside populations. The Teton Range herd was historically migratory with a summer range high in the mountains at elevations around 9,800 feet and winter ranges in valleys and canyons at lower elevations of 6,500 feet. However, given recent human development, domestic sheep grazing, hunting, and repressed wildfire regimes, habitat availability and fractured movement corridors have caused the Teton Range herd to significantly adjust migration patterns. Research estimates that migration to low elevation habitat in the

²⁴² Courtemanch 2014

²⁴³ WGFD 2013

²⁴⁴ Courtemanch 2014

winter might have ceased as early as 1900, approximately 65 years ago.²⁴⁵ The small size and isolated nature of the Teton Range bighorn sheep population means that access to suitable habitat during difficult winter months, as well as during the summer fat gain, is vital to ensure that the population can persist. Habitat modeling by Courtemanch (2014) based on GPS collar data from Teton bighorn sheep indicates that high-quality winter habitat exists in the proposed South Bowl expansion area and high-quality summer habitat exist in South Bowl and in the existing SUP boundary. In total, 45,278 acres of high-quality winter habitat were modeled within the Teton Range.²⁴⁶ About 7,085 acres (16 percent) are within the CTNF, 54 acres of which are located within the proposed South Bowl expansion area, which represents 0.12 percent of the total high quality winter habitat in the Teton Range and 0.76 percent of the total in CTNF.

A total of 122,468 acres of high-quality summer bighorn sheep habitat are mapped within the Teton Range, including 45,293 acres (37 percent) in the CTNF.²⁴⁷ The proposed project contains 932 acres of modeled high quality summer habitat, representing 0.76 percent of the total for the Teton Range and two percent of the total in the CTNF. The proposed South Bowl expansion area contains 195 acres of modeled high-quality summer habitat (0.43 percent for the CTNF), with 17 acres of that overlapping with modeled high-quality winter habitat. About 737 acres of modeled high-quality summer habitat for bighorn sheep is also mapped within the Dreamcatcher/Crazy Horse, Colter, and Blackfoot Pods (1.6 percent of total in CTNF). About 55 acres of modeled high quality summer habitat, that lies southeast and down-canyon from the South Bowl expansion area and includes the Apostle Cliffs mineral lick, might typically be accessed by bighorn sheep by traveling through the South Bowl area.

Mountain goats, who pose a threat of disease transmission and competition to bighorn sheep, have been observed in the South Bowl expansion area and on the north side of Teton Canyon. Project related surveys between June 2019 and June 2021 documented several mountain goats within the proposed South Bowl expansion area, as well as extensive sign of goats including scatt and fur. However, land management agencies conducted mountain goat removal efforts between 2019-2022 to protect the native sheep population as addressed above. Removal efforts were successful and mountain goats likely no longer pose a substantial threat to bighorn sheep.²⁴⁸

Great Gray Owl

In Wyoming, great gray owls occur primarily in the northwest portion of the state where they utilize lodgepole pine, Douglas fir, aspen, and cottonwood/spruce between 5,000 and 9,840 ft elevation.²⁴⁹ Great gray owls generally nest in snags or existing stick nests near open areas or meadows that provide foraging habitat.²⁵⁰ Approximately 674 acres of late seral or late seral/potential old growth forests within the project area provide suitable habitat for great gray owls.²⁵¹ From March 21 to April 11, 2019, automated recording units were placed at 18 locations across Mono Trees and the existing SUP for week-long periods to survey for great gray owls. The automated recording units were placed to coincide with great gray owl observations recorded in the Wyoming Natural Diversity Database. South Bowl was not

²⁴⁵ Courtemanch et al. 2017 and Whitfield and Keller 1984

²⁴⁶ Courtemanch et al. 2017

²⁴⁷ Courtemanch 2014

²⁴⁸ Correspondence with A. Courtemanche, 2022

²⁴⁹ WGFD 2017a

²⁵⁰ Bedrosian et al. 2015

²⁵¹ See definition in Table 1 of the GIS Late Seral and Old Growth Forest Assessment

surveyed as no suitable great gray owl habitat is present in that area. Two call-playback surveys were also conducted along Ski Hill Road on March 25 and April 11, 2019. Great gray owls were not detected during either the recording unit or call playback surveys.

In 2020, additional automated recording units were placed at 12 locations to the west of the Mono Trees for week-long periods from March 31 to April 21, 2020, to survey for great gray owls. Great gray owl calls were detected at one location approximately 1.4 miles west of Mono Trees. Data from the Wyoming Natural Diversity Database WYNDD between 1985 and 1994 documented great gray owl activity near and potentially within the project area, indicating that great gray owls may have historically occurred more frequently in the project vicinity.

Boreal Owl

Boreal owls prefer the structurally complex spruce/fir forests of northwest Wyoming during the breeding season.²⁵² Within Wyoming, boreal owls are typically found above 6,500 ft elevation where they utilize tree cavities for nesting during the breeding season.²⁵³ Boreal owl detections occurred within the project area during the breeding season in 2019, during which CTNF biologists identified two 30-acres nesting areas. From March 21 to April 11, 2019, automated recording units were placed at 18 locations across Mono Trees and the existing SUP for week-long periods to survey for boreal owls. The automated recording units were placed to coincide with the two identified nesting areas. South Bowl was not surveyed as no suitable boreal owl habitat is present in that area. Boreal owl calls were detected at six of those locations at varying call intensities. Two call-playback surveys were also conducted along Ski Hill Road on March 25 and April 11, 2019. One boreal owl was heard calling during the March 25th call-playback survey along Ski Hill Road about a half mile from the project area. Based on detection timing and call intensities, one boreal owl territory is centered in the area at the base of Peaked Mountain, and a separate boreal owl territory is located between the edge of the Sacajawea Lift and the proposed Mono Trees expansion area.

Additional boreal owl surveys were conducted from March 31 to April 21, 2020 to the west of the Mono Trees area. Automated recording units were placed in 12 locations in the vicinity of Dry Creek, Bustle Creek, and Mill Creek drainages. Boreal owl calls were detected at four of those locations, the closest location occurring approximately 0.5 miles west of the Mono Trees area, indicating that at least one boreal owl has a territory encompassing the survey area west of the project area.

Flammulated Owl

Within the Rocky Mountain Region, flammulated owls prefer old growth and late seral forest habitats and are often associated with ponderosa pine or Douglas fir.²⁵⁴ Flammulated owls are an obligate cavity nesting species that typically utilize cavities created by northern flickers and pileated woodpeckers.²⁵⁵ About 674 acres of late seral or late seral/potential old growth forests provide suitable nesting habitat for flammulated owls in the project area.²⁵⁶ Recent surveys completed in Teton County, Wyoming detected 18

²⁵² Anderson and Clark 2002

²⁵³ WGFD 2017a

²⁵⁴ Defined in Table 1, Grand Targhee Master Development Plan Projects: GIS Late Seral and Old Growth Forest Assessment. Wright et al. 1997.

²⁵⁵ Bull et al. 1990, Arsenault 1999

²⁵⁶ See definition in Table 1 of the GIS Late Seral and Old Growth Forest Assessment

flamulated owls in conifer and conifer/aspen forests. For this project, flamulated owl detections occurred within the Mono Trees, South Bowl, and existing SUP portions of the project area during pre-project surveys, the locations of which were informed by previous surveys. From May 14 to June 5, 2019, automated recording units were placed at 18 locations across the project area for week-long periods to survey for flamulated owls. Flamulated owl calls were detected at eight of those locations at varying call intensities. One call-playback survey was also conducted along Ski Hill Road on June 11, 2019. Based on detection timing and call intensities during the 2019 surveys, it was determined that flamulated owl territories are located south of the base of the Sacajawea Lift, near the base of Peaked Mountain, and within the proposed Mono Trees expansion area.

American Goshawk

Within the Rocky Mountains, American goshawk nesting habitat is described as forests with mature to old age structure, and dense forested stands with high canopy cover (75 percent-85 percent). Nests are often located within proximity (~1 km) to a forest opening, water source, or open meadow for foraging. Within the CTNF, northern goshawks most commonly nest in Douglas fir and lodgepole pine trees with a mean age of 143 and 96 years respectively. During breeding season, northern goshawks generally occupy large home ranges between 1,400 – 13,000 acres and large areas of mature and old growth forests within these home ranges are associated with higher breeding success.

The Forest Service monitors 64 American goshawk nesting territories throughout the Targhee Planning Area, 36 of which have been occupied in the past 10 years. Territory R04F15D56T17 occurs within and adjacent to the project area. This territory reflects about 2.7 percent of the American goshawk territories that have been occupied across the Targhee Planning Area over the last 10 years.

Automated recording units that were placed northwest of Mill Creek in the Mono Trees area for owl surveys, from April 4 to April 11, 2019, also recorded American goshawk activity. An American goshawk was detected calling at three locations with consistent pre-dawn vocalizations documented at one location. Automated recording units that were placed in the same location for additional owl monitoring surveys detected American goshawk calling activity again from May 14-22, 2019.

Biologists conducted call playback surveys from June 17-19, 2019, around the April and May 2019 detections. Call playback surveys resulted in a response from an adult American goshawk that flew into the survey point silently. Nest searching was conducted in the vicinity where it flew to, and an active nest with nestlings was located on June 17, 2019. Habitat assessments were conducted at additional calling stations located about 0.5 mile from the nest location after the nest was located to determine additional suitable nesting and foraging habitat for the pair in the nest area. The nest was checked again on July 11, 2019, by two wildlife biologists with the Forest Service, and it was determined that one chick had fledged, and one chick remained in the nest. In 2020, a second active American goshawk nest location was found in the vicinity of the first nest, serving as an alternate nest location for the American goshawk pair. In 2021, Forest Service biologists identified a third nest adjacent to the 2019 nest. Two young successfully fledged from this nest in 2021. Forest Service biologists also documented successful fledging from Nest B in 2022. The three nest sites are located within 300 feet of the boundary of the proposed Mono Trees expansion area. The only other American goshawk detected during survey efforts was a juvenile goshawk located near the base of Peaked Mountain.

Peregrine Falcon

Peregrine falcons nest in both natural cliff habitat as well as manmade structures across North America. In Wyoming, they generally select cliffs for nest sites and forage in nearby open areas.²⁵⁷ Cliff outcroppings in the proposed South Bowl expansion area provide suitable nesting habitat for peregrine falcons and herbaceous and open habitat types in the project area provide potential foraging habitat. Peregrine falcons are known to nest in Teton Canyon, which is located just south of the project area, closest to the proposed South Bowl and Mono Trees expansion areas. Forest Service surveys from as early as 1989 document breeding and nesting activity at multiple eyrie locations among cliffs on the southern side of the canyon above the Treasure Mountain Boy Scout Camp, with the most recent activity documented in 2018. Less frequent breeding and nesting activity has been documented among the Apostle Cliffs on the north side of Teton Canyon, just south of the project area, with the most recent nesting activity documented in 2008. In 2018, a Forest Service biologist observed a hunting peregrine falcon 1.4 miles south of the proposed South Bowl expansion area.

Four pre-project surveys for peregrine falcons were conducted in 2019 from May-June along the northside of Teton Canyon Road and throughout the proposed South Bowl expansion area where potential habitat exists. Surveys involved using binoculars and a spotting scope to scan suitable habitat for peregrine falcon nesting activity (e.g., peregrine falcon observations, whitewash on cliffs, nesting ledges) during early morning hours consistent with methods provided in General Guidelines for Wildlife Surveys.²⁵⁸ On May 3, 2019, suitable habitat within the proposed South Bowl expansion area visible from Teton Canyon Road was surveyed, with particular focus on a previous eyrie location. On June 7, 2019, this area was resurveyed for peregrine falcon activity or sign of nesting. On June 27, 2019, the southwest end of South Bowl was surveyed for potential habitat and peregrine falcon sign. On July 10, 2019, the South Bowl area was surveyed from the northern edge looking south; one soaring raptor had the wing shape and flight form that resembled a falcon but was flying high in a southwesterly direction towards the southern side of Teton Canyon. No additional peregrine falcon sign was observed during survey efforts.

Three-Toed Woodpecker

Three-toed woodpeckers nest and forage within high elevation coniferous forests with dead and dying trees.²⁵⁹ The species is a cavity nester and typically excavates cavities in dead trees. Within the existing SUP, Mono Trees, and South Bowl, about 1,694 acres of aspen/conifer, Douglas fir, lodgepole pine, mixed conifer, and spruce/fir forest provide suitable nesting and foraging habitat for three-toed woodpeckers. Snags have not been quantified within the project area but were observed during pre-project surveys in 2019 throughout forested areas, particularly in the proposed Mono Trees expansion area where development and skier use does not currently occur. Three-toed woodpeckers have been observed occasionally within the project area at GTR in 2012, 2014, and 2016.²⁶⁰ Three-toed Woodpeckers were not detected during project surveys in 2019; however, they are expected to occur within the project area based on habitat availability.

²⁵⁷ WGFD 2017a

²⁵⁸ Provided by C. Kula, CTNF, 2019

²⁵⁹ NatureServe 2017

²⁶⁰ Bird 2019

Western Toad

Western toads occur throughout many areas of the Teton Range. The breeding habitat of western toads typically consists of wetlands near other waterbodies and within less densely forested areas.²⁶¹ Western toads select pools of slow-moving streams or shallow areas of ponds, lakes, or reservoirs as egg-laying sites.²⁶² The toads hibernate in burrows under the frost line during the winter. They have been detected within 10 miles north, south, and east of the project area in the past, as recently as 2014. Western toads were not observed within the project area in 2019; however, 47.32 acres of wetlands and riparian areas within the project area may provide suitable habitat for the species. Most of these acres (42.26) are in the existing SUP area, with 1.35 acres located in the South Bowl expansion area and 3.71 acres in the Mono Trees expansion area. The current species distribution in Wyoming includes Teton County, with the closest known occurrence to the proposed project being about 6.6 miles to the southeast.

Columbia Spotted Frog

Columbia spotted frogs are associated with wet areas (e.g., pooled to flowing wetlands, small streams, lake margins, moist areas, and moist meadows) in both the foothill and montane zones.²⁶³ Following winter emergence, in which the timing can occur anywhere from February to July depending on elevation, latitude, and local conditions, adults will head to breeding areas.²⁶⁴ Columbia spotted frogs select sites that contain shallow and stagnant or slow-moving water (e.g., ponds, marshes, small springs, lake edges, and slow-moving streams) for breeding. Columbia spotted frogs tend to stay in close proximity to water during the breeding season but may wander to other areas that may have more food resources and/or fewer predators and competitors after breeding is concluded.²⁶⁵ Columbia spotted frogs have been detected throughout the Teton Range. In 1992, Columbia spotted frogs were observed in Teton Canyon in a pond located 0.6 miles south of the project area. Columbia spotted frogs were not detected within the project area during vegetation and aquatic resource surveys in 2019; however, 47.32 acres of wetlands and riparian areas within the project area may provide suitable habitat for the species. Most of these acres (42.26) are in the existing SUP area, with 1.35 acres located in the South Bowl expansion area and 3.71 acres in the Mono Trees expansion area.

Yellowstone Cutthroat Trout

Yellowstone cutthroat trout are not known to occur within Mill Creek, the primary stream located within the project area, but are present in Teton Creek, located downstream of the project area.²⁶⁶ Mill Creek runs for approximately 15,000 feet through the project area, including along the proposed Mono Trees expansion zone and flows into Teton Creek 9,000 feet southwest of the project area, which is one of the primary spawning and rearing streams for cutthroat in the Teton River.²⁶⁷ While survival of cutthroat trout fry is comparable in Teton Creek to other streams, overwinter survival of young cutthroat trout in Teton Creek is low and may be due to competition with introduced rainbow and brook trout.

²⁶¹ Keinath and McGee 2005

²⁶² NatureServe 2023

²⁶³ WGFD 2017b

²⁶⁴ Patla and Keinath 2005

²⁶⁵ Patla and Keinath 2005

²⁶⁶ IDFG 2007

²⁶⁷ Koenig 2006

Townsend's Big-Eared Bat

No caves or cave-like structures (e.g., mines) that bats could use as a hibernaculum or maternity roost are known to occur within the project area.²⁶⁸ Further, Idaho Natural Heritage, Wyoming Natural Heritage, and Forest Service Natural Resource Information System databases do not show any Townsend's big-eared bat occurrence records in or near the project area. The closest incidental observation to the project area is about 10.1 miles to the southeast from 2004.²⁶⁹ However, the project area does contain suitable foraging habitat/movement corridors.

Western Bumble Bee

Western bumble bee occurrences have not been documented in the project area by the Wyoming National Heritage and Forest Service databases; however, certain areas in the project area and vicinity have the potential to provide habitat for the species. Approximately 3,225 acres of habitat in the project area consists of forest, shrubland or herbaceous cover with a diversity of flowering plant species that may provide suitable foraging or nesting habitat for western bumble bees. 2,360 of these acres occur in the existing SUP boundary, while 599 are in the Mono Trees expansion area, and 266 are in the South Bowl expansion area. Forest cover makes up 2,510 acres of the project area which may represent the most valuable habitat for western bumble bees.²⁷⁰ 1,742 acres of this forest cover is in the existing SUP while the Mono Trees expansion area contains 584 acres and the South Bowl expansion area contains 185 acres.

SPECIES OF LOCAL CONCERN

Moose

The entire proposed project area is located within spring, summer, and fall range for moose. Wyoming Game and Fish Department (WGFD) designated crucial winter-yearlong range for moose, which is located approximately 0.4 miles north of the project area in the South Leigh Creek drainage. WGFD designated crucial winter range for moose is about 0.8 miles west of the project area in the Bustle Creek drainage.²⁷¹ The moose present within the project area are a part of the Targhee Herd, which is estimated to have a population of 150 - 200 based on 2009 survey data, with a population decline likely occurring in the early 2000s.²⁷² Current population estimates for the population are not available due to a lack of mid-winter surveys for the Targhee Herd.

Winter range for the Targhee Herd primarily consists of mountain shrub and aspen communities; however, many of those habitats are in an old and decadent stages. The 2017 Teton County Focal Species Habitat Mapping also identifies potential winter habitat within the Mill Creek drainage in the proposed Mono Trees expansion area. Approximately 325 acres of forest and shrub habitat have the potential to provide value for moose, most of which lies in the existing SUP (238 acres). Areas south of the project area along Teton Canyon Road, and west of the project area in the Mill Creek, Bustle Creek, and Dry Creek drainages, are also identified as potential moose winter habitat.

²⁶⁸ Comments from C. Kula, CTNF, March 14, 2022

²⁶⁹ C. Kula, CTNF

²⁷⁰ Graves et al. 2020, Goulson et al. 2015, Liczner and Colla 2020, Eckerter et al. 2021

²⁷¹ WGFD 2012

²⁷² WGFD 2018

Extensive sign of moose (scat, tracks) was observed throughout and adjacent to the Mono Trees expansion area during work completed from March through July 2019, particularly within the Mill Creek drainage. Moose signs were also observed in the southwest corner of the South Bowl expansion area in July. Additionally, moose were regularly observed in the Teton Canyon area during June and July surveys in 2019, and two moose were observed on game cameras set up 0.14 mile south of the project area in December 2020.

Mule Deer

The proposed project area is located within spring, summer, and fall range for mule deer. The southern tip of the Mono Trees expansion area also includes a portion of WGFD designated crucial winter yearlong range for mule deer, which extends south towards Teton Canyon Road and west past Ski Hill Road.²⁷³ A mule deer migration route is also located west of the project area between Bustle Creek and Dry Creek and extends westward to the valley floor. The 2017 Teton County Focal Species Habitat Mapping Project also documents additional areas of potential mule deer winter habitat within the existing SUP.

The mule deer that are present within the project area are a part of the Targhee Herd. Although recent population estimates are not available for the Targhee herd, the population is likely declining.²⁷⁴ Much of the historical winter range for the Targhee Herd of mule deer has been converted to agriculture and residential development in Idaho. The remaining winter range for mule deer primarily consists of mountain shrub and aspen communities, with many of those communities being old and decadent or encroached upon by conifers.²⁷⁵

Within the project area, approximately 715 acres of aspen forest and mountain shrubland provide suitable winter habitat for mule deer. 535 of these acres are in the existing SUP, 124 are in the South Bowl expansion area, and 56 acres are in the Mono Trees expansion area. The mapped winter range for mule deer that is located within and south of the project area is primarily comprised of south facing slopes dominated by mountain shrub and aspen communities. A portion of this winter range area also has a Forest Service seasonal closure to protect wintering mule deer in the area. The mule deer winter range in Teton Canyon is also located within the Teton Canyon Hazardous Fuels project area (approved in 2018 and initiated in 2019) where hand thinning and prescribed burning have been approved to improve habitat, (by promoting regeneration of mountain shrubs and aspen trees and removing encroaching conifers and old and decadent shrubs).

Mule deer were commonly observed during summer surveys for other species in 2019, including at the base of GTR where development is present. Game camera data documented heavy mule deer use of a game trail in the western part of the proposed South Bowl expansion area in October and November 2020 and May and June of 2021. Often in groups of up to 11 individuals, mule deer moved in a northwesterly direction throughout day and nighttime in the fall of 2020 which suggests this area could be used as a migration route. Extensive signs of mule deer (scat, tracks) was also observed throughout the current SUP area and proposed expansion areas. Mule deer were also commonly seen along Ski Hill Road in the

²⁷³ WGFD 2012

²⁷⁴ WGFD 2018

²⁷⁵ Ibid

vicinity of the turnoff for Teton Canyon and further north up Ski Hill Road within WGFD designated mule deer crucial winter/yearlong range.

Elk

Elk that occur within the proposed project area are a part of the Targhee Herd. The project area is located entirely within spring, summer, and fall range for elk.²⁷⁶ Occasional sign of elk (scat, tracks) was observed throughout the Mono Trees expansion area, particularly in the southern and western portions. WGFD designated winter range for elk is located at lower elevations west of the project area near the Idaho/Wyoming border. Based on the 2017 Teton County Focal Species Habitat Mapping Project, potential winter habitat for elk is mapped in a couple of small areas within Mono Tress, as well as south of the project area in north Teton Canyon. Winter range for the Targhee Herd of elk primarily consists of mountain shrub and aspen communities with conifer encroachment, as well as riparian areas along the Teton River in Idaho.²⁷⁷

American Pika, Pacific Marten, and Gray Wolf

Three additional species of local interest that occur within the vicinity of the project area and could be impacted by the proposed project are the American pika, American pine marten, and gray wolf.

The American pika occurs within subalpine and alpine talus fields where rocky habitats provide cover and nearby mountain meadows or patches dominated by grasses and forbs provide forage.²⁷⁸ American pika is at risk of decline due to changes in temperature and precipitation, and are listed as a Species of Greatest Conservation Need in Wyoming with an NSS2 Status. Approximately 881 acres of high elevation sparsely vegetated areas or alpine and subalpine herbaceous meadows provide suitable habitat for American pika in the project area. Most of this (820 acres) are located in the existing SUP while the remaining 61 acres are in the South Bowl expansion area. Direct impacts to suitable habitat types would occur to 147 acres in the existing SUP and 4 acres in the South Bowl expansion area. Within the project area, South Bowl contains the highest quality habitat for the species, with undeveloped talus slopes and montane grasslands.

The American marten utilizes mature spruce-fir forests and old growth coniferous forests with ample coarse woody debris and snags for foraging, cover, and den sites.²⁷⁹ The proposed project occurs within coniferous forests that provide suitable habitat for martens. 325 acres of spruce/fir forest provide potential American marten habitat in the project area with 283 of these acres located in the existing SUP, 41 acres in South Bowl, and 1 acre in the Mono Trees area. Late seral or late seral-potential old growth forest cover makes up 401 acres within the existing SUP, 197 acres in the Mono Trees expansion area, and 76 acres in South Bowl which may serve as habitat for American martens. Direct impacts are proposed in 233 acres of spruce/fir forest in the project area, 207 acres of which are in the existing SUP. The Mono Trees expansion area contains the most suitable habitat for pine martens, due to the amount of late seral conifer forests and ample snags and woody debris. A marten was observed on a game camera 0.20 miles south of the project area in February 2021, while another individual was captured in the western end of the South Bowl Area in June 2021, indicating that they are present in the project area. The Mono Trees

²⁷⁶ WGFD 2012

²⁷⁷ WGFD 2017c

²⁷⁸ WGFD 2017a

²⁷⁹ Ruggiero et al. 1998

expansion area contains the most suitable habitat for pine martens, due to the amount of late seral conifer forests and ample snags and woody debris.

Gray wolves also occur within the vicinity of the project area and are habitat generalists occupying a variety of areas including coniferous forests.²⁸⁰ The Chagrin Wolf Pack is located along the Idaho/Wyoming border between Alta, Wyoming and Victor, Idaho in the vicinity of the project area. Wolf calls were detected on audio recorders in April 2020, west of the project area in the Bustle Creek drainage, which may be from individuals of the Chagrin wolf pack. Although wolves are no longer listed under the ESA, their populations are still monitored for game management and over 300 wolves were estimated to be within Wyoming as of December 31, 2019.²⁸¹

MIGRATORY BIRDS

No breeding and/or nesting activities for USFWS Birds of Conservation Concern (for BCR 10) were detected in the project area during field surveys (other than flammulated owls which were previously discussed in detail under the discussion of Forest Service Region 4 Sensitive Species); however, some birds of conservation concern were detected, and suitable habitat is present for many of them in the project area. USFWS Birds of Conservation Concern and/or PIF watch list species detected in the project area include flammulated owl, olive-sided flycatcher, Cassin's finch, and Williamson's sapsucker.²⁸² Additionally, calliope hummingbird, rufous hummingbird, broad-tailed hummingbird, evening grosbeak, and black rosy-finch have the possibility to occur in the project area.

The **Wildlife BE** provides a complete list of USFWS Birds of Conservation Concern for BCR 10 and PIF watch list species, as well as information about potential occurrences in the project area.

In addition to the USFWS Birds of Conservation Concern and PIF watch list species, there are dozens of migratory bird species that are expected to occur within the project area and may be impacted by the proposed development. Golden eagles are one migratory bird species that have the potential to be impacted by the project, due to the presence of potential nesting habitat within the mountainous cliff habitat and rock outcrops in high elevations within and in the vicinity of the project area.²⁸³ Additional migratory birds that were observed in the project area in 2019 and 2020 include yellow-rumped warbler, ruby-crowned kinglet, red-naped sapsucker, golden-crowned kinglet, hermit thrush, Swainson's thrush, dusky flycatcher, western tanager, black-headed grosbeak, western wood-pewee, white-crowned sparrow, chipping sparrow, tree swallow, warbling vireo, house wren, and American pipit. These species were detected throughout the project area in forest, shrubland, and meadow habitats while conducting fieldwork for sensitive species.

²⁸⁰ Meaney and Beauvais 2004

²⁸¹ WGFD 2019

²⁸² USFWS 2008, Rosenberg et al. 2016

²⁸³ WYNDD 2020

3.13.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Threatened and Endangered Species

The No Action Alternative reflects a continuation of existing operations and management practices at GTR. Aside from natural vegetative cover changes caused by succession, forest fire, or disease, the project areas would remain unimpacted by any new on-site development associated with GTR. However, over the next 10 years, winter and summer visitation at GTR is projected to increase by 24 percent. Ongoing recreation continues to affect wildlife (such as *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species*), while projected growth in GTR visitation, as well as increased recreation and traffic in the vicinity, would further impact wildlife (such as *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species*) in the area into the future.

Regular maintenance that occurs on an annual basis is required to ensure safety, functionality, and environmental sustainability of GTR facilities. The following activities are typically conducted and are used as a baseline for effects analysis to wildlife:

Vegetation Management to maintain clear and safe ski runs, trails, and lift lines:

- Selective tree cutting: removal of trees that encroach on ski trails, lift lines, summer trails, and other infrastructure.
- Thinning: reducing tree density in certain areas to maintain existing openness in existing ski runs.
- Pruning: trimming branches or snags that pose a hazard to skiers, summer users, or equipment.

Slash Management to manage debris resulting from tree cutting and other vegetation management activities:

- Chipping: Slash (branches, small trees, bushes) is chipped on-site. Wood chips are used for erosion control or as mulch.
- Pile burning: In some cases, slash is collected into piles and burned under controlled conditions.
- Removal: transporting slash to designated areas for composting or disposal, especially if chipping or burning is not feasible.

Grading to maintain existing ski terrain and other recreational infrastructure:

- Slope grading: reshaping of slopes to ensure they meet safety standards and provide a consistent skiing surface.
- Trail maintenance: smoothing and leveling trails for skiing, or summer use. Includes filling in ruts and holes created by erosion or heavy use.
- Infrastructure support: grading around lift bases, lodges, and other structures to ensure stable and safe access for guests and maintenance vehicles.

Erosion Control to prevent soil erosion and protect water quality:

- Silt fences and straw wattles: installing barriers to capture sediment and prevent it from washing into waterways or damaging recreational areas.
- Revegetation: planting native vegetation on disturbed slopes and areas prone to erosion to stabilize the soil.
- Terracing and water bars: creating terraces and installing water bars on trails and slopes to slow water runoff and reduce erosion.

Mowing and Brush Clearing to maintain open and sage areas for skiing and other recreational activities:

- Slope mowing: regular mowing of grassy and brushy areas on ski slopes to keep vegetation at manageable levels and ensure clear sight lines.
- Brush clearing: removing dense brush and undergrowth that can obstruct trails and pose fire hazards.

Weed Control to manage invasive weeds that can harm native ecosystems and hinder resort operations:

- Chemical treatment: applying herbicide to control the spread of invasive weeds in accordance with environmental regulations and best practices.
- Mechanical removal: hand-pulling or using machinery to remove weeds from critical areas such as ski runs and around infrastructure.

Environmental Considerations: all maintenance activities are conducted with attention to minimizing environmental impacts:

- Timing: scheduling activities during periods that minimize disruption to wildlife and plant communities, avoiding sensitive breeding or nesting seasons per USFS standards and guidelines.
- Best Management Practices: implementing BMPs to reduce soil disturbance, control erosion, and protect water quality.
- Permitting and compliance: ensuring all activities comply with local, state and federal regulations, including obtaining necessary permits and adhering to NEPA guidelines and agreements with the USFS under the existing Special Use Permit.

Canada Lynx

Ongoing recreation associated with GTR continues to impact wildlife (such as lynx if they are present) while projected growth of GTR visitation, as well as increased recreation and traffic in the vicinity, would further impact wildlife (such as lynx if they were present) in the area into the future. Recreation associated with GTR may cause decreased prey availability or alter lynx movement within and between LAUs. The cumulative effect of increased traffic on Teton Pass and Ski Hill Road would play a small role in increasing habitat impairment for Canada lynx. Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future associated with the current infrastructure at GTR has the potential to have minor additional effects on lynx and its habitat that are above current baseline conditions. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have minor impacts to potential Canada lynx habitat and habitat of their primary prey, snowshoe hares. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may modify lynx habitat from year to year but continual regrowth likely keeps value and availability

of lynx habitat in the project area steady under current practices. Ongoing maintenance activities at GTR may also deter use of the area during certain times of year due to noise or heavy machinery when trails are being groomed, mowed, etc. to ensure safety and quality recreation. Therefore, a determination of *may affect, but is not likely to adversely affect*, was reached for the Canada lynx under the No Action Alternative. Any potential effects under this alternative would be far less than any of the action alternatives.

Grizzly Bear

Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future associated with the current infrastructure at GTR has the potential to have minor additional effects on grizzly bears and their habitats that are above current baseline conditions. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have minor impacts to potential grizzly bear habitat and use of the area. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may modify suitable grizzly bear habitat from year to year but continual regrowth likely keeps value and availability of grizzly bear habitat in the project area steady under current practices. Maintenance activities may also deter use or disturb bears in the area due to noise or heavy machinery. However, these activities have been ongoing for the duration of the resort's operations; therefore, grizzly bears may be accustomed to it or already avoid the area during certain times of year. Given the large ranges occupied by grizzly bears and that higher value habitat provides more suitable habitat for denning and reproduction outside the existing SUP, effects are not likely to be detectable at the population scale. Therefore, the No Action Alternative *may affect, but is not likely to adversely affect*, the grizzly bear. Any potential effects under this alternative would be far less than any of the action alternatives.

Wolverine

Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future associated with the current infrastructure at GTR has the potential to have minor additional effects on wolverines and their habitat that are above current baseline conditions. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have minor impacts to potential wolverine habitat and use of the area. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may modify suitable wolverine habitat or occasionally remove potential denning habitat from year to year but continual regrowth likely keeps value and availability of wolverine habitat in the project area steady under current practices. Maintenance activities may also deter use or disturb wolverines in the area due to noise or heavy machinery. However, these activities have been ongoing for the duration of the resort's operations; therefore, wolverines may be accustomed to it or already avoid the area during certain times of year. Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future and ongoing maintenance and operations associated with the current infrastructure at GTR has the potential to have minor additional effects on wolverines and their habitat that are above current baseline conditions. Effects are likely to be undetectable due to continuous forest regeneration within the project area and because high value habitat outside the project area will remain unimpacted. Therefore, the No Action Alternative *May Affect But is Not Likely to Adversely Affect*. Any potential effects under this alternative would be far less than any of the action alternatives.

Monarch Butterfly

There would be no direct, indirect, or cumulative effects to monarchs by selection of the No Action Alternative as substantial milkweed and monarch butterfly populations are not present in the project area. Records of plant observations including USFS databases, the Wyoming Natural Diversity Database, and the Monarch Milkweed Mapper supported by the Xerces Society do not document milkweed or monarch observations in the project area. Recorded observations of milkweed species in the region appear to generally occur at lower elevations than most of the terrain within the project area. It may be that the climate, soil conditions, moisture and elevations are not suitable in the project area to support substantial milkweed populations and monarch breeding. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to impact monarch butterfly habitat and nectar sources. Mowing or grading to maintain ski terrain, facilities, and summer trails may result in removal of nectar sources; however, this regular disturbance also maintains open areas and forest and likely promotes growth of flowering plants. Therefore, it is possible that ongoing maintenance results in a net positive impact for monarch butterflies. Since selection of this alternative would not add to direct, indirect, or cumulative effects for monarchs, selection of the No Action Alternative would have the determination of *not likely to jeopardize the continued existence of the species or result in destruction or adverse modification to proposed critical habitat* for the monarch butterfly.

Region 4 Sensitive Species

Bighorn Sheep

The Teton Range bighorn sheep herd is generally avoidant of human activity in the winter²⁸⁴ and increasing skier use of the South Bowl expansion area, in part attributable to the new Colter Lift, could alter bighorn sheep use of the area and habitat in the vicinity. Land managers have identified shrinking access to viable winter habitat as a primary threat to the small and isolated Teton Range bighorn sheep herd and current conditions with the Colter Lift and backcountry access points may contribute to constraints on bighorn sheep winter habitat.²⁸⁵

Backcountry skiing has increased in popularity in recent years and the significant uptick in winter recreation that has been documented in other parts of the Teton Range in the last few decades has likely influenced the western slopes of the Tetons too, including the South Bowl area and Teton Canyon. Research suggests that Teton Range bighorn sheep avoid winter recreation routes even at low levels of intensity.²⁸⁶ Bighorn sheep might, therefore, avoid using the South Bowl area for winter habitat given the existing and potentially increasing backcountry skiing activity. However, observations of sheep at Apostle Cliffs mineral lick in the winters of 2018 and 2022 indicate that bighorn sheep might travel through South Bowl even when backcountry skiing is intermittently occurring in the area. The Teton Range Bighorn Sheep Working Group's January 2022 news release requested that backcountry skiers voluntarily avoid the South Bowl area and the south facing slopes of Teton Canyon surrounding South Bowl in order to encourage bighorn sheep use of this valuable winter habitat. Construction of the Colter lift improved access to backcountry terrain in the South Bowl area beginning in the 2022/2023 winter operational

²⁸⁴ Courtemanch 2014

²⁸⁵ Teton Range Bighorn Sheep Working Group 2020

²⁸⁶ Courtemanch 2014

season. New backcountry access points and ease of access has resulted in a recent increase in skier use of the area and may be impacting bighorn sheep movement and winter habitat selection.

This increase in winter activity may be affecting wildlife species movement and habitat use. Habitat modeling by Courtemanch (2014) based on GPS collar data from Teton bighorn sheep identifies 54 acres of high-quality bighorn sheep winter habitat in the South Bowl expansion area. The Apostle mineral lick, an important nutrition source used by bighorn sheep in winter months, is less than 900 feet south of the new Colter lift-access terrain. Monitoring data and the nature of surrounding terrain suggest that bighorn sheep travel through the South Bowl area to access the mineral lick. The Teton Range bighorn sheep herd is generally avoidant of human activity in the winter and increased skier use of the South Bowl expansion area with the new Colter lift could alter bighorn sheep use of the area and habitat in the vicinity. Land managers have identified shrinking access to viable winter habitat as a primary threat to the small and isolated Teton Range bighorn sheep herd²⁸⁷ and current conditions with the Colter lift and backcountry gates may contribute to constraints on bighorn sheep winter habitat. The extent of the impacts of increased activity are not yet known. Game cameras were installed in the South Bowl expansion area in January of 2023 to monitor skier use and survey for bighorn sheep and land management agencies are strategizing additional monitoring efforts and management actions.

In summary, due to the projected increase in recreation use associated with GTR, and increasing participation in backcountry skiing, the No Action Alternative *may impact individuals or their habitat, but not likely contribute to a trend toward federal listing or loss of population viability.*

Great Gray Owl, Boreal Owl, Flammulated Owl, American Goshawk, Peregrine Falcon, Three-Toed Woodpecker, Western Toad, and Columbia Spotted Frog

Ongoing recreation associated with GTR continues to impact great gray owls, boreal owls, flammulated owls, American goshawks, peregrine falcons, three-toed woodpeckers, western toads, and Columbia spotted frogs, while projected growth of GTR visitation, as well as increased recreation in the vicinity, would further impact these species in the area into the future. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continuously affect habitat for these species in the project area. Removal of trees and brush to maintain ski terrain, facilities, and summer trails may result in removal of suitable habitat. However, continual regrowth likely keeps suitable habitat in the project area steady under current practices. Management activities also help maintain more open forests in some areas which could provide valuable foraging habitat. Mowing and grading for maintenance may harm rodents and rodent nest that provide prey for great gray owls in the area; however, impacts to overall prey availability are likely minimal and temporary. Therefore, the No Action Alternative *may impact individuals or their habitat, but would not likely contribute to a trend toward federal listing or loss of population viability.*

Yellowstone Cutthroat Trout

The existing development, operations, and maintenance of GTR, including snow making have ongoing effects on the watersheds downstream from the resort. Research indicates that watersheds associated with ski resort developments typically see increased sediment and solutes than comparable watersheds where ski resorts are absent.²⁸⁸ Current management practices at GTR include sediment and erosion control

²⁸⁷ Teton Range Bighorn Sheep Working Group 2020

²⁸⁸ Wemple et al. 2007

which help minimize impacts to the watershed. However, water quality in downstream waterways that provide cutthroat trout habitat are impacted by the existence and maintenance of the ski resort. Therefore, the No Action Alternative *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability* for the species.

Townsend's Big-Eared Bat

Although winter and summer visitation at GTR is projected to increase by 24 percent over the next 10 years, no additional impacts to Townsend's big-eared bats above baseline conditions are anticipated (since there are no known cave or cave-like structures capable of supporting a maternity colony or hibernacula). Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to affect potential Townsend's big-eared bat foraging or roosting habitat. Removal of trees and brush or mowing to maintain ski terrain, facilities, and summer trail may modify suitable habitat from year to year but continual regrowth likely maintains value and availability of bat habitat in the project area under current practices. Maintenance activities may also deter use or disturb bats in the area due to noise or heavy machinery. As a result of the limited habitat, the No Action *May Impact Individuals or their habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability* to Townsend's big-eared bats.

Western Bumble Bee

No additional impacts to the western bumble bee above baseline conditions are anticipated as the amount and availability of habitat is anticipated to be maintained. Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to affect potential western bumble bee habitat. Removal of trees and brush or mowing to maintain ski terrain, facilities, and summer trail may modify suitable habitat from year to year but continual regrowth likely maintains value and availability of western bumble bee habitat in the project area under current practices.

Species of Local Concern

Ongoing recreation associated with GTR continues to impact species of local concern (e.g., mule deer, elk, moose, American pika, American pine marten, and gray wolf, while projected growth in GTR visitation (associated with existing infrastructure), as well as increased recreation and traffic in the vicinity would further impact these species in the area into the future.

Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have minor impacts to potential habitat and use of the area. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may modify suitable habitat from year to year but continual regrowth likely keeps value and availability of habitat in the project area steady under current practices. Maintenance activities may also deter use or disturb in the area due to noise or heavy machinery. However, these activities have been ongoing for the duration of the resort's operations; therefore, some species may be accustomed to it or already avoid the area during certain times of year. The No Action Alternative *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*.

Migratory Birds

Ongoing recreation associated with GTR continues to impact migratory birds, while projected growth in GTR visitation, as well as increased recreation and traffic in the vicinity, would further impact migratory birds in the area into the future.

Ongoing maintenance and management activities that occur annually to ensure safety, functionality, and environmental sustainability of GTR facilities have had and will continue to have minor impacts to potential habitat and use of the area. Removal of trees and brush and mowing to maintain ski terrain, facilities, and summer trail may modify suitable habitat from year to year but continual regrowth likely keeps value and availability of habitat in the project area steady under current practices. Maintenance activities may also deter use or disturb in the area due to noise or heavy machinery. However, these activities have been ongoing for the duration of the resort's operations; therefore, some species may be accustomed to it or already avoid the area during certain times of year.

ACTION ALTERNATIVES

Threatened and Endangered Species

For the *federally listed endangered, threatened, proposed, or candidate species* considered in this analysis, Alternatives 2-5 were determined to:

- *Not Likely to Jeopardize the Continued Existence of the Species OR Result in Destruction OR Adverse Modification of Proposed Critical Habitat*
 - ◆ Determination made for monarch butterfly, all action alternatives
- *May affect, but is not likely to adversely affect*
 - ◆ Determination made for Canada lynx, all action alternatives and wolverine, Alternative 3 and 5.
- *May affect, and is likely to adversely affect*
 - ◆ Determination made for grizzly bear, all action alternatives and wolverine the Proposed Action and Alternative 4.

The following paragraphs provide a summary of the rationale used to make the aforementioned determinations for each *federally listed endangered, threatened, proposed, or candidate species* and highlight the different project components associated with each alternative that are attributable to different levels of effects and/or determinations. For a complete description of effects by species/project component the reader is referred to the **Wildlife BA**.

Canada Lynx

Activities proposed under all action alternatives would have the following effects on lynx:

- Convert currently mapped suitable lynx habitat to linkage areas or non-habitat within the Teton Creek and Badger Creek LAUs. Both Mono Trees and South Bowl currently do not function as quality foraging habitat for lynx, since the horizontal cover is low and there were minimal snowshoe hare detections. Decreased effectiveness would continue with expansion of the operational boundary into these areas. Both areas would continue to provide for lynx movements within and between LAUs.
- The consequences to lynx habitat would be greatest under Alternatives 2 and 5.

- Add cumulatively to the net effects of habitat conversion that has occurred within both LAUs.
- Increase traffic volumes on Ski Hill Road and Teton Pass but would not be expected to lead to a measurable increase in the probability of lynx mortality on either road.

Although the proposed project components would reduce the availability of lynx habitat, they would not compromise the ability of either LAU to support foraging, denning, or traveling lynx. Impacts will not result in take of lynx and loss of habitat will not be detectable at the LAU scale given that the habitat is not the highest quality and ample higher quality habitat remains elsewhere in the LAU. As a consequence, for all action alternatives, the proposed project *may affect, but is not likely to adversely affect*, the Canada lynx. Please see **Table 6 in Wildlife BA** and text from **Section 5.1.2** for more information regarding this determination.

All action alternatives were determined to be consistent with relevant NRLMD standards and guidelines applicable to ski areas. The standards and guidelines relevant to this analysis were directed by the GTR Expansion NRLMD Briefing Paper, which is cited in the **Wildlife BA** and available for review in the project file.²⁸⁹

Grizzly Bear

Activities proposed under all action alternatives would have the following effects on grizzly bears:

- Convert current secure grizzly bear habitat to nonsecure habitat within the Teton BAU. Secure habitat is most abundant in the proposed Mono Trees and South Bowl expansion areas due to their distance from existing roads, while most of the existing SUP currently consists of nonsecure habitat due to existing roads associated with current resort operations. Expanding the GTR SUP boundary into Mono Trees under Alternatives 2 and 5 would entail constructing an access road through the center of the area to the proposed lift base, which would eliminate most of the secure habitat in the area. Expanding the GTR SUP boundary into South Bowl under Alternatives 2 and 4 would entail constructing an access road along the southern boundary of the South Bowl expansion area which would eliminate almost all of the secure habitat in the area and secure habitat outside of the expansion area in Teton Canyon. Roads proposed in the existing SUP under all alternatives would reduce secure habitat in the existing SUP and impact secure habitat outside the SUP Boundary to the east. Existing secure habitat is likely most valuable in the proposed expansion areas where little development and activity currently occurs; therefore, impacts under Alternatives 2, 4, and 5 would be most severe.
- Add cumulatively to the net effects of habitat conversion that has occurred within the Teton BAU.
- Modify grizzly bear behavior and habitat use, due to increased development density and human activity, both during construction and once improvements are implemented (particularly improvements that would increase summer activity). On mountain facilities and food and beverage vendors could also modify grizzly bear behavior. Increased summer recreation activity, facilities, and associated bear attractants would increase the likelihood of bear-human conflicts which have the potential to lead to individual mortality if a problem bear is removed.

²⁸⁹ Kula and Yorgason 2023

- Effects to grizzly bear habitat would be greatest under the Proposed Action, followed by Alternative 4, followed by Alternative 5, with lowest impacts under Alternative 3.

The proposed projects have the potential to adversely affect individual grizzly bears and potentially cause mortality of individual bears, through human-bear conflicts into the future. However, over 101,000 acres of secure habitat would remain in the Teton BAU and continue to provide habitat for grizzly bears. Though population growth has slowed in recent years, the population of grizzly bears in the Greater Yellowstone Ecosystem has increased from approximately 200-300 bears in 1975 to an estimated 1,000 in 2021.²⁹⁰ Given the regional population status of grizzly bears and widespread availability of secure grizzly bear habitat and valuable vegetative cover types for grizzly bears throughout the Teton BAU, the proposed projects under all action alternatives are not expected to impact the viability of the grizzly bear population in the Teton BAU or Targhee Planning Area. However, because incidental take of individuals would become more likely under all action alternatives (over the life of the projects), the proposed project *may affect, and is likely to adversely affect*, the grizzly bear.

Standards and guidelines from *1997 Forest Plan* related to grizzly bear include measures designed for management of grazing allotments, which are not applicable to the proposed projects. Additional standards and guidelines include provisions for educational programs, habitat management, problem bears, and cross-country travel. Consistency with relevant standards and guidelines would occur under all action alternatives. A detailed description of *1997 Forest Plan* consistency as it relates to potential impacts to grizzly bear can be found in the Wildlife BA and is tracked through **Appendix B** of this document.

Wolverine

Implementation of any of the four action alternatives within the current operational boundary is not expected to have substantial direct or indirect effects to wolverine. Wolverines would be expected to continue to avoid foraging within the SUP Area due to their documented avoidance of winter recreation, utilizing it rather for the purposes of traveling within their home range. While wolverines have been observed within the SUP Area, it is most likely that they were traveling rather than foraging or denning.

Implementation of Alternative 2 would impact 242.37 acres of suitable cover, travel, and foraging habitat outside of the existing SUP Area, which equates to 0.23 percent of the habitat in the theoretical 422 km² range. Implementation of Alternative 3 would have no impact outside of the existing SUP Area. Implementation of Alternative 4 would impact 38.35 acres outside of the existing SUP Area, which equates to 0.04 percent of the habitat in the theoretical 422 km² range. Implementation of Alternative 5 would impact 204.02 acres outside of the existing SUP Area, which equates to 0.20 percent of the habitat in the theoretical 422 km² range. This habitat conversion would be insignificant at the scale of the 422 km² home range of a male wolverine. Furthermore, adequate forested terrain exists surrounding the existing and proposed SUP Areas for wolverines to travel around the SUP Area if they so choose. Wolverines have also been documented traveling within the existing SUP Area and would be expected to continue to do so following implementation of any Action Alternative. Consequently, none of the Action Alternatives would prevent dispersal, seasonal, or daily movements for wolverines within their home range. Nor would they be expected to have significant effects on foraging.

²⁹⁰ Haroldson et al. 2022; USFWS 2016

Implementation of Alternative 3, therefore, would not alter the habitat effectiveness of the SUP Area; wolverines would be expected to continue to avoid foraging or denning within the SUP Area but would continue to utilize the area for travel to and from more suitable habitat surrounding the SUP Area.

Direct effects to wolverine habitat within the Mono Trees and South Bowl, would alter the current effectiveness of suitable cover, travel and forage habitat within each area; however, this habitat conversion would be insignificant at the scale of the home range of a male wolverine. Furthermore, adequate forested terrain exists surrounding the existing and proposed SUP Areas for wolverines to travel around the SUP Area if they so choose. Wolverines have also been documented traveling within the existing SUP Area and would be expected to continue to do so following implementation of any action alternative. Consequently, none of the action alternatives would prevent dispersal, seasonal, or daily movements for wolverines within their home range. Nor would they be expected to have substantial effects on foraging.

All four action alternatives would have direct effects on modeled wolverine denning habitat. However, wolverines are not likely to den within the existing SUP Area. Eliminating the SUP Area denning habitat from consideration, the impacts to modeled denning habitat beyond the limits of the current SUP Area would be 23.42 acres for the Proposed Action, zero acres for Alternative 3, 14.47 acres for Alternative 4, and 8.94 acres for Alternative 5. Increased development density and human activity in the proposed expansion area would indirectly impact modeled denning habitat beyond the direct impacts of vegetation removal. It is possible the South Bowl and Mono Trees expansion areas would no longer provide viable denning habitat. The impact of this lost habitat could cause increased fragmentation on denning habitat in the surrounding area.

Implementation of the projects proposed under Alternative 3 *may affect but are not likely to adversely affect individual wolverines.*

Alternatives 2 and 4 each add South Bowl to the SUP boundary. the Proposed Action also includes Mono Trees. The noise and commotion associated with winter recreation in these expanded SUP Areas would be expected to preclude use of habitat in these new parts of the SUP Area for wolverine life requisites other than travel to and from more suitable habitat.

Both of these action alternatives would include direct avalanche control into South Bowl. Avalanches pose a threat to wolverines under both natural and controlled conditions. Avalanches currently occur in South Bowl and pose an existing threat of mortality to wolverines. If South Bowl is added to the SUP Area and control efforts begin, avalanches could be of less severity but could occur more frequently. Were a wolverine to be caught and killed by a management induced avalanche, this would no longer be considered a chance occurrence but would be directly induced by the addition of South Bowl to the SUP Area. Therefore, since an individual wolverine could be killed by a management-induced avalanche, implementation of Alternatives 2 or 4 *may affect and is likely to adversely affect individual wolverines.*

Similar to Alternatives 2 and 4, Alternative 5 would have direct, indirect, and cumulative effects on wolverines and their habitat outside of the existing SUP Area. Wolverine habitat in Mono Trees, outside the existing SUP Area, would be impacted by this alternative, but such impacts, at the scale of the home range of a male wolverine, would not be substantial. The noise and commotion associated with winter recreation in Mono Tree would be expected to preclude use of habitat in this new part of the SUP Area for wolverine life requisites other than travel to and from more suitable habitat. Consequentially, implementation of Alternative 5 *may affect, but is not likely to adversely affect individual wolverines.*

Monarch Butterfly

Implementing the action alternatives would convert portions of forests and shrublands to grass/forb dominated ski trails, resulting in an overall decrease in canopy cover across the existing SUP Area and within the proposed expansion areas (depending on the alternative). The following table summarizes how each action alternative would convert forested habitat to grass/forbs. Alternatives 2 and 5 would result in the greatest increase in herbaceous cover.

Table 3.13-3. Forest Habitat Converted to Grass/Forb (acres)

Alternative	Existing SUP Area	Mono Trees	South Bowl	Total
Alt 2	65.82	62.50	27.08	155.39
Alt 3	65.82			65.82
Alt 4	65.82		27.08	92.89
Alt 5	65.82	62.50		128.31

Source: Alder Environmental, 2023

The action alternatives would decrease the amount of forest/shrub canopy coverage across the project area, thereby increasing edge habitat and the amount of herbaceous vegetation in the area. This conversion of forest and shrublands to herbaceous vegetation and decrease in canopy cover could benefit monarch butterflies by increasing available nectar sources as there would be an increased opportunity for milkweed to grow as well. Suitable roosting habitat would remain in the residual forest stands, included within proposed gladed areas.

There is the potential for a monarch butterfly to be killed as a result of colliding with a vehicle or from construction activities. This is unlikely, due to the mobility of the species, and the lack of milkweed for breeding activities (meaning the species would not be congregating in areas in high densities for long portions of time).

The CTNF currently utilizes targeted herbicide applications when necessary to control weed infestations. If herbicides are required due to weed invasions following project implementation, control would be targeted rather than large-scale broadcast applications. This method of weed control avoids indiscriminate destruction of insects, including monarch butterflies.

The project area lacks milkweed to support monarch breeding but does contain habitat with potential to support migrating/moving adult butterflies. Overall, the action alternatives would diversify the habitat within the SUP boundary, thereby likely increasing available nectar sources. The action alternatives would comply with all standards and guidelines in the 1997 Forest Plan and hydrologic/wildlife BMPs. As a result, the proposed action alternatives are *Not Likely to Jeopardize the Continued Existence of the Species OR Result in Destruction OR Adverse Modification of Proposed Critical Habitat*.

Region 4 Sensitive Species

For all 11 of the sensitive species discussed in this document in detail (bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, Columbia spotted frog, western toad, Yellowstone cutthroat trout, and Townsend's big-eared bat), Alternatives 2-5 *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal*

Listing or Loss of Population Viability. For all other sensitive species, there would be no impact associated with the proposed projects.

The following paragraphs provide a summary of the rationale used to make the aforementioned determination for each Region 4 Sensitive species and highlight the different project components associated with each alternative that are attributable to different levels of impacts and/or determinations. For a complete description of impacts by species/project component the reader is referred to the Wildlife BE.

Bighorn Sheep

About 54 acres of high-quality bighorn sheep winter habitat are modeled in the South Bowl expansion area, and the Proposed Action would directly impact 11 acres due to tree removal and grading. Given Teton Range bighorn sheep's aversion to recreation activity, particularly in the winter, all 54 acres of high-quality winter habitat modeled in South Bowl could be rendered unusable by bighorn sheep upon commencement of construction followed by ongoing ski resort operation with the expansion.

Disturbance from avalanche control activities (e.g. use of explosives) particularly within the proposed South Bowl area is also likely to impact bighorn sheep. The effect of avalanche explosives on bighorn sheep or other ungulates has not been well studied but given that Teton Range bighorn sheep avoid human activity in the winter, noise-intensive avalanche mitigation activities are likely to further deter bighorn sheep from using habitat in South Bowl.²⁹¹ Mortality could potentially result from avalanches caused by control activities as well. Avalanche mitigation in South Bowl may also further restrict movement of bighorn sheep to the Apostle Cliffs mineral lick in Teton Canyon and potentially deter use of nearby habitat if the noise is a strong deterrent.

Expanded summer resort operations are not planned in South Bowl but increased summer operations in the existing SUP could result in recreationists traveling into the South Bowl area more frequently which, combined with intermittent summer maintenance in South Bowl, might deter bighorn sheep from using valuable summer habitat in the area. Increased attractions at GTR may stimulate a general uptick in summer and winter recreation activity in neighboring areas like Teton Canyon and JSW, with backcountry skiers and hikers using the resort amenities to access more remote terrain, which could put additional pressure on Teton bighorn sheep and their viable range.

Loss of habitat within and in the vicinity of the project area, particularly in South Bowl and in Teton Canyon, which is likely accessed through South Bowl, has the potential to harm the Teton Range herd viability. Although use of South Bowl by bighorn sheep during mid-winter months has not been officially documented, benefits of management actions aimed at improving habitat in the area (including suggested winter closures and the Teton Canyon Fuels Reduction Project-approved in 2018 and initiated in 2019) would not materialize if South Bowl were developed. Bighorn sheep may adjust movement patterns and habitat ranges to spend more time in the JSW adjacent to the project area; however, degradation of habitat in South Bowl and Teton Canyon due to the proposed development, combined with projected increases in recreation activity throughout the range of the Teton bighorn sheep herd, has the potential to substantially reduce access to adequate nutrition and protective habitat. As a result, this alternative has the potential to result in an overall decline in the population of the Teton or Targhee Herd. Although the Proposed Action

²⁹¹ Courtemanch 2014

would impact the Teton Range bighorn sheep, across the overall Targhee Planning Area (which contains multiple herds), the alternative *May Impact Individuals or Their Habitat but would Not Likely Contribute to a Trend Toward Federal Listing or Cause a Loss of Population Viability*. All but 2 acres of the modeled high quality bighorn sheep habitat within the total project area are within the South Bowl area and existing SUP boundary; therefore, impacts of Alternative 4 would be comparable to those of the Proposed Action.

Under Alternative 3, minimal habitat loss and fragmentation would occur for bighorn sheep from proposed development within the SUP boundary. Increased activity and development within the existing SUP could influence bighorn sheep use of neighboring habitat if recreationists travel more frequently into South Bowl, Teton Canyon, or the JSW for backcountry skiing or hiking. However, given that bighorn sheep currently travel through or near South Bowl despite intermittent backcountry skiing, it is likely that access to the Apostle Cliffs mineral lick and habitat in Teton Canyon would remain. Further, projects aimed at improving habitat in South Bowl and Teton Canyon for bighorn sheep, including potential winter closure areas suggested by the Teton Range Bighorn Sheep Working Group and the Teton Canyon Hazardous Fuels Reduction Project, would proceed under Alternative 3 and may provide benefits for the Teton herd.

Alternative 5 does not include any direct impacts to South Bowl, where the more valuable bighorn sheep is located and which provides an important movement corridor, and thus impacts to bighorn sheep under Alternative 5 would be lower compared to Alternatives 2 and 4. Similar to Alternative 3, projects aimed at improving habitat in South Bowl and Teton Canyon for bighorn sheep use, including potential winter closure areas suggested by the Teton Range Bighorn Sheep Working Group and the Teton Canyon Hazardous Fuels Reduction Project, would proceed under Alternative 5 and may provide benefits for bighorn sheep.

The 1997 *Forest Plan* guidelines and standards pertain to the management and phasing out of domestic sheep grazing allotments and are not applicable to the proposed projects. Domestic sheep grazing allotments have been effectively phased out from the Teton Range Subsection, reducing the threat of disease to bighorn sheep in the region.

Great Gray Owl

Out of the 674 acres of late seral or late seral/potential old growth forests within the project area which provides suitable habitat for great gray owls, about 218.96 acres would be directly impacted under the Proposed Action. About 40 percent tree removal for ski glades is planned for 158 of these acres with grading and 100 percent tree clearing proposed for the remaining 60.96 acres. Removal of forested areas would reduce the amount of suitable nesting habitat for great gray owls and may disturb great gray owls if they were to occur in the project area. Areas impacted by 40 percent tree removal may still provide adequate nesting habitat and tree clearing may increase foraging habitat for great gray owls; however, disturbance due to construction activities or ongoing maintenance and recreation following implementation would likely deter great gray owls from using the remaining otherwise suitable habitat in the project area and resulting in functional loss of habitat due to these indirect impacts.

Prevalence of suitable habitat outside of the project area in the surrounding vicinity indicates that suitable habitat for great gray owls is not limiting. Within the Teton Creek LAU, 10,530 acres of late seral, late seral and old growth, or potential old growth forest is present. Under the Proposed Action, the proposed projects would impact 2.1 percent of these late-seral forested acres. Detection data from pre-project

surveys, Idaho Fish and Game observations, Wyoming Game and Fish observations, and Forest Service route surveys indicates that great gray owls occur frequently outside of the project area throughout the Targhee Planning Area. The Proposed Action would reduce suitable great gray owl nesting habitat in the project area, could increase foraging habitat in some areas, and may modify owl behavior due to increased activity, but ample suitable habitat in the vicinity and frequent occurrence elsewhere in the vicinity of the project indicates that the Proposed Action *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. Impacts under Alternative 5 are like those under the Proposed Action, described previously, because expansion into the Mono Trees area would impact valuable potential great gray owl habitat.

Impacts under Alternative 3 are less severe than the Proposed Action and Alternative 5 because no SUP boundary expansion is proposed, and valuable habitat in the Mono Trees area would remain undeveloped. Alternative 3 would reduce suitable great gray owl nesting habitat in the project area and may modify owl behavior due to increased activity; however, habitat in the existing SUP is less valuable than undisturbed habitat in the adjacent Mono Trees area. Impacts under Alternative 4 are like those under Alternative 3, because valuable habitat in the Mono Trees area would remain undeveloped.

The proposed projects are consistent with relevant standards and guidelines from the *1997 Forest Plan*, as described in **Appendix B** of this document. Specifically, this includes standards around timber harvest and the maintenance of 40 percent of the forested acres in late seral age classes within a 1,600-acre area around all known great gray owl nest sites. Great gray owls were not detected in the project area during pre-project surveys and no known active or historic nest sites occur in the area. The nearest great gray owl detection during 2019 and 2020 survey efforts was located 1.4 miles west of the project area. Forested acres were analyzed in a 1,600-acre area encompassing the 2020 detection (this included a portion of the proposed Mono Trees expansion area). This was done to better understand how forest age class would likely change around the detection across the various alternatives. About 958 acres of the 1,600-acre area consist of late seral or late seral/potential old growth forests or 59.9 percent. Impacts in the proposed Mono Trees expansion area under Alternatives 2 and 5 would reduce the percentage of late-seral forest in the 1,600-acre area to 58.3 percent, which is well over the 40 percent threshold required by Great Gray Owl Habitat Standard 2.

Boreal Owl

Boreal owl detections occurred within the project area during the breeding season in 2019, and based on survey data, CTNF biologists identified two 30-acre nesting areas. The Proposed Action would directly impact a total of 25.2 acres within these two nesting areas, which would include 2.3 acres of complete tree clearing (and grading) and 22.9 acres of 40 percent tree thinning for ski glades. More specifically, 1.1 acres of grading and tree clearing for a summer trail is proposed in the southern-most 30-acre nesting territory. While in the second nesting area, 22.9 out of 24.1 acres of proposed impacts are for ski glades, where only 40 percent forest cover would be removed. A project specific amendment to the *1997 Forest Plan* would be required for both nesting areas to exempt the proposed projects from Boreal Owl Habitat Standard 1. PDC prohibiting vegetation clearing/construction activities associated with the action alternatives within the boreal owl designated 30-acre territories from March 1 to August 15 would help prevent individual mortality during project construction. Vegetation clearing could occur during other times of the year and within the period of March 1 to August 15, so long as it was related to vegetation clearing or construction of project components outside the designated 30-acre nest areas (refer to Table 2.4-1). Tree removal and increased activity in and near active nesting territories would adversely modify

boreal owl habitat and could displace individual owls from current territories. There is also the chance that boreal owls may continue to use at least the southern-most nest site, since the Proposed Action would impact such a low percentage of the area.

The proposed projects would impact boreal owl nesting sites, reduce the amount of suitable nesting habitat in the project area, may displace individual owls from current nesting territories, and potentially deter use of habitat in and near the proposed projects for the life of the ski resort permit. It is feasible that implementation would result in abandonment of one or more nesting territories. This risk is higher under Alternatives 2 and 5, because proposed expansion into the Mono Trees areas involves removal of more vegetation in the nesting areas and will bring ongoing recreation activity closer to both nesting territories. These impacts have the potential to reduce breeding and nesting success of individual owls in the project area. However, PDC would minimize impacts and help prevent mortality to nesting boreal owls. Within the delineated 3,600-acre boreal owl home range, approximately 2,189 acres, or 61 percent, consists of late seral or late seral/potential old growth forest stands. Impacts of the Proposed Action would reduce the percentage of late-seral forest in the home range to 59 percent, maintaining the 40 percent threshold required by the *1997 Forest Plan*. Habitat modeling for the Targhee Species Viability Study estimates that approximately 358,302 acres of potential boreal owl habitat (habitat classified as very good, good, or moderate) exists within the Targhee Planning Area.²⁹² Detection data from pre-project surveys, Idaho Fish and Game observations, and Forest Service route surveys indicate that boreal owls occur outside of the project area throughout the Targhee Planning Area. Because the Proposed Action may affect the success of individual boreal owls in the project area, but the forest level population is likely to remain viable, the determination for the Proposed Action is *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. Impacts to boreal owls under Alternative 5 are similar to those under the Proposed Action. Due to its inclusion of the proposed Mono Trees projects, the same impacts would occur to the two nesting areas under Alternative 5. A project specific amendment to the *1997 Forest Plan* would be required for both nesting areas to exempt proposed projects from Boreal Owl Habitat Standard 1.

The proposed projects under Alternative 3 and Alternative 4 would impact a boreal owl nesting territory, reduce the amount of suitable nesting habitat in the project area, and may displace individual owls from a current nesting territory and deter use of habitat in or near the proposed projects. However, impacts under these alternatives are less severe than those under Alternatives 2 and 5, which proposes expansion into the Mono Trees area where additional valuable habitat is currently undisturbed. Under Alternatives 3 and 4, which exclude expansion into Mono Trees, only one of the 30-acre boreal owl nesting territories would be impacted by proposed projects, where 1.1 acres of grading and tree clearing are proposed for a summer trail. A project specific amendment to the *1997 Forest Plan* would be required for the nesting area to exempt proposed projects from Boreal Owl Habitat Standard 1. Alternatives 3 and 4 would impact the success of individual boreal owls to a lesser degree than Alternatives 2 and 5.

Flammulated Owls

Based on survey data, CTNF biologists identified five nesting areas within the Mono Trees, Colter, and Sacajawea terrain areas. A total of 46 acres within these nesting areas would be impacted by the Proposed Action and would include 11 acres of tree clearing and/or grading with the remaining 35 acres occurring as 40 percent tree thinning for ski glades. Direct impacts in the 3 southern most nesting areas will be

²⁹² Miller et al. 2022

minimal and similar forest cover will be maintained with most of the impacts concentrated in the 2 northern most nesting areas, which are both inside the existing SUP. A project specific amendment to the *1997 Forest Plan* would be required to exempt proposed projects from Flammulated Owl Habitat Standard 1, which prohibits timber removal in 30-acre nesting areas. PDC prohibiting vegetation clearing/construction activities associated with the action alternatives within the flammulated owl designated 30-acre territories from May 1 to August 15 would help prevent individual mortality during project construction. Vegetation clearing could occur during other times throughout the year and within the period of May 1 to August 15, so long as it was related to vegetation clearing or construction of project components outside the designated 30-acre nest areas (refer to **Table 2.4-1**).

The proposed projects would reduce the amount of suitable flammulated owl nesting habitat in the project area and may displace individual owls from current nesting territories and deter use of habitat in and near the proposed projects for the life of the ski resort permit. Since modified forest cover and increase in human activity would be maintained for the duration of the ski resort permit, it is likely that several of the existing nesting territories could be abandoned. This risk is particularly high under Alternatives 2 and 5 which include expansion into Mono Trees and significant impacts in two of the northern most nesting territories. The Teton Creek LAU contains 10,530 acres of late seral, late seral and old growth, and late seral/potential old growth forests and only 2 percent would be impacted by the Proposed Action. Further, the Targhee Species Viability Study estimates that about 290,533 acres of habitat (habitat classified as very good, good, or moderate) with potential to support flammulated owls occurs in the Targhee Planning Area.²⁹³ Detection data from Idaho Fish and Game and observations from Forest Service route surveys indicates that flammulated owls occur outside of the project area, particularly in the Palisade Ranger District south of the project area. The Proposed Action would impact active flammulated owl nesting territories, reduce suitable habitat in the project area, and potentially reduce nesting or foraging success of individual owls, but ample suitable habitat in the vicinity and occurrences elsewhere in the *1997 Forest Plan* area indicates that the Proposed Action *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. Impacts to flammulated owls under Alternative 5 are similar to those under the Proposed Action, because most of the flammulated owl habitat for the proposed project occurs in the existing SUP and Mono Trees expansion area. All five of the designated 30-acre nesting territories would also be impacted under Alternative 5.

Under Alternative 3, approximately 45.7 acres of impacts, including 10.7 acres of grading and tree clearing, and 40 percent tree removal for ski glades on 35 acres are proposed. Specifically, the Teton Creek LAU contains 10,530 acres of late seral, late seral and old growth, or potential old growth forests and less than 2 percent would be impacted under Alternative 3. Impacts under Alternative 3 are less severe than Alternatives 2 and 5 that contain Mono Trees. Impacts to flammulated owls under Alternative 4 are similar to those under Alternative 3, as Mono trees is not included in this Alternative and South Bowl contains limited late seral or late seral/potential old growth. Please refer to the Wildlife BE for more information.

American Goshawk

American goshawks require large areas of mature forest with high canopy cover for nesting and fledging. Removal of forest habitat within the identified nesting and fledging areas has the potential to impact nesting success and foraging behavior of individual goshawks that are known to nest in the vicinity of the

²⁹³ Miller et al. 2022

proposed project (territory R04F15D56T17). Under the Proposed Action, about 1.7 percent of the nesting area would be directly impacted by tree removal or thinning and habitat within the remaining 98.3 percent may be degraded due to increased noise and activity in the vicinity. Noise and human activity in the nesting area or vicinity, during construction or due to ongoing maintenance or recreation, could modify nesting and/or foraging behavior of American goshawks. Specifically, avoidance flights may increase and cause higher energy expenditures, otherwise suitable habitat might be avoided, and adults may temporarily or permanently abandon nests which could result in failed reproduction.

The removal of forest cover may impact the fitness and nesting success of American goshawks in the confirmed territory R04F15D56T17. The Proposed Action would also limit future options for new nest locations in the area due to removal of suitable habitat elsewhere in the project area. An estimated 1,431 acres of suitable American goshawk nesting habitat currently exists in the project area, and about 522 acres of impacts would occur in these areas under the Proposed Action. Most of these proposed impacts (309 acres) are within the Mono Trees expansion area where habitat is more valuable because the area is currently undeveloped. About 909 acres of suitable habitat would remain after project implementation, which constitutes 28 percent of the total project area. However, remaining habitat may be affected by increased noise and activity in the vicinity and could render portions of the habitat functionally unsuitable. Goshawk nesting and foraging behavior could be adversely modified.

Within the delineated American goshawk foraging area, approximately 84 percent currently consists of mature or late seral forest which provide potential nesting habitat for goshawks. Under the Proposed Action, 269 acres of this forest would be impacted. Mature or late seral forest cover would be reduced to 79 percent of the total foraging area, which is well over the 40 percent threshold required under *1997 Forest Plan*. Habitat modeling for the Targhee Species Viability Study mapped about 266,224 acres (habitat classified as very good, good, or moderate) of potential goshawk habitat across the Targhee Planning Area.²⁹⁴ Documentation of 64 American goshawk nesting territories throughout the Targhee Planning Area, more than half of which have been occupied in the past 10 years, further illustrates that American goshawk habitat in the Targhee Planning Area is not limiting. The Proposed Action could result in the abandonment of territory R04F15D56T17; however, sufficient forest habitat would remain in the Targhee Planning Area to support the viability of the species. Therefore, the determination for the Proposed Action is *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. Effects of Alternative 5 for American goshawks are similar to those under Alternative 2, the Proposed Action, because expansion into the Mono Trees area would impact nesting and other valuable habitat for territory R04F15D56T17.

Under Alternative 3, no direct impacts would occur in the nesting area for territory R04F15D56T17 as there would be no expansion into Mono Trees. As a result, the documented nesting sites would be insulated from impacts in the existing SUP by over 0.5 mile. High intensity noise and activity from construction has the potential to temporarily disturb goshawk behavior (if they were to use the existing SUP), but territory R04F15D56T17 would be preserved. Impacts under Alternative 4 would be similar to those under Alternative 3 because the Mono Trees area would not be developed, and habitat in the nesting area for territory R04F15D56T17 would be preserved.

²⁹⁴ Miller et al. 2022

Under Alternatives 2 and 5, some of the proposed activities would not be consistent with *1997 Forest Plan* standards and guidelines for American goshawks and a project specific amendment to the *1997 Forest Plan* would be needed. Alternatives 3 and 4, which do not include expanding into the Mono Trees area, would have no direct impacts on the known American goshawk territory; therefore, a project specific amendment to the *1997 Forest Plan* would not be required for these alternatives. PDC included in Table 2.4-1 states that there would be no vegetation clearing/construction activities within the American goshawk designated nest area from April 1 to August 15). This would ensure that proposed disturbances in the western extent of the Mono trees pod (for developed ski terrain and the bottom terminal of the proposed lift) would not cause undue impacts to nesting goshawk. For clarity, vegetation clearing, and construction could proceed in all other areas that do not overlap the designated 200-acre nest area during the period April 1 to August 15. Additionally, another PDC states, “Tree clearing for construction of a segment of proposed summer trail along the western extent of the existing SUP area within the designated American goshawk post fledging area shall only occur between October and February” (refer to Table 2.4-1). This PDC is specific to the proposed summer trail overlapping the post fledging area in the western extent of the existing SUP area, between the Sacajawea and Colter lifts. Please refer to **Appendix B** and **Appendix C** to review amendments to the *1997 Forest Plan* related to the American goshawk.

Peregrine Falcon

Cliff outcroppings in the proposed South Bowl expansion area provide suitable nesting habitat for peregrine falcons and herbaceous and open habitat types in the project area provide potential foraging habitat. Peregrine falcon breeding or nesting activity has not been detected in the project area, but direct and indirect impacts to these habitats may deter falcons from using otherwise suitable nesting habitat or modify nesting or foraging behavior. Grading and vegetation clearing in foraging habitat may remove some habitat or impact prey availability; however, clearing of forested areas for the proposed projects would increase open areas and could result in a net gain of potential foraging habitat for peregrine falcons in portions of the project area. Noise and activity during construction activities or ongoing disturbance from new recreation-related activities (e.g., skier use, grooming, avalanche control, hiking, mountain biking, and maintenance activity) could adversely modify peregrine falcon nesting and/or foraging behavior. However, recreation activity is currently high year-round in Teton Canyon, and peregrine falcon use of habitat in the area indicates that the falcons in the canyon might be somewhat tolerant of human activity.

Two cliff sites within two miles of the proposed projects have served as nesting sites for peregrine falcons in past years: an eyrie located about one mile south of the project area on the southern side of the Teton Canyon and an eyrie among the Apostle Cliffs on the north side of Teton Canyon, about 0.12 miles south of the project area. The most recent known activity at the Apostle Cliffs was in 2008, and activity at the further site was in 2018. The proposed projects under the Proposed Action would bring increased noise and activity closer to these known eyries and have the potential to deter or disrupt nesting peregrine falcons. However, the abundance of cliff habitat in nearby Teton Canyon suggests that nesting habitat is not limited, and numerous eyries have been documented throughout the *1997 Forest Plan* area. Idaho Fish and Game, Wyoming Game and Fish, and the Forest Service observation data also shows that peregrine falcons are widespread throughout the Targhee Planning Area. Impacts of the proposed projects have the potential to disturb peregrine falcon nesting and foraging behavior in and near the project area, but nesting habitat outside the impact area and widespread occurrence of falcons Forest-wide indicates that the Proposed Action *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. The impacts to peregrine falcons from Alternative

4 would be similar to that of the Proposed Action because the proposed South Bowl expansion area contains suitable nesting habitat for falcons and disturbance outside the current SUP boundary would bring development, noise, and activity further into Teton Canyon where valuable nesting habitat exists. Conversely, impacts to peregrine falcons under Alternative 3 would be less severe than those under all other action alternatives (Alternatives 2, 4, and 5) because no SUP boundary expansion is included. Impacts associated with Alternative 5, would more closely resemble those under Alternative 3 as the proposed Mono Trees area does not provide suitable nesting habitat. Under Alternatives 3 and 5, suitable nesting habitat in South Bowl would remain isolated from development. Under Alternative 3 development and increased activity associated with GTR would not expand as far into Teton Canyon where peregrine falcon habitat is most valuable. This is also true for Alternative 5 but to a lesser extent than Alternative 3, as the proposed Mono Trees area would still encroach on Teton Canyon.

1997 Forest Plan standards and guidelines related to peregrine falcon include (page 111-20):

Guidelines:

1. For proposed projects within two miles of known falcon nests consider such items as 1) human activities (aircraft, ground and water transportation, high noise levels, and permanent facilities) which could cause disturbance to nesting pairs and young during the nesting period March 15 to July 31, 2) activities or habitat alterations which could adversely affect prey availability.

The proposed project would comply with this guideline, as impacts from human activities and habitat alterations within two miles of known nests were considered across all alternatives.

Standards:

1. Within 15 miles of all known nest sites, prohibit all use of herbicides and pesticides which cause eggshell thinning as determined by risk assessment.²⁹⁵
2. Restrict climbing and other human disturbances from March 15 through July 31 to avoid adverse impacts at known falcon nest sites.

Consistency with Standard 1 would be maintained under the proposed Alternatives. Herbicides and pesticides which cause eggshell thinning are not permitted on the Forest.

As described in the previous paragraph, the proposed activities (across Alternatives 2-5) are within two miles of known peregrine falcon eyries. The proposed projects would bring increased noise and activity closer to the eyries and have the potential to deter or disrupt nesting and foraging peregrine falcons. Specifically, activity between March 15 and July 31 close to the known Apostle Cliffs eyrie could disturb or even prevent future nesting activity. A project specific amendment to the *1997 Forest Plan* would be needed to exempt the projects from Peregrine Falcon Standard 2. As described in the previous paragraphs, effects would be most severe under alternatives which include expansion of the SUP boundary because the expansion areas encroach further into Teton Canyon.

Three-Toed Woodpecker

The Proposed Action would impact 618.93 acres, or 36.5 percent, of the conifer forest cover in the project area. About 145.17 acres of which would occur as tree clearing and/or grading, and about 366.47 acres

²⁹⁵ USDA-Forest Service, September 1992

where 40 percent tree removal for ski glades is planned. Complete removal of vegetation for ski trails, summer activities, and infrastructure would reduce the amount of suitable habitat in the project area (existing SUP, Mono Trees, and South Bowl) for three-toed woodpeckers, particularly because snags and standing dead trees would likely be removed. Glading activities that only remove 40 percent of vegetation may still provide suitable habitat in forested areas, particularly where snags and dying trees remain for forage and nesting habitat. PDC states that, where practicable and deemed safe, snags would be left in place to preserve biological potential and habitat for woodpeckers and other species. This would help minimize impacts to woodpecker nesting habitat; however, where skier safety is a concern or where grading and vegetation clearing occurs, snag cover would be reduced. Vegetation mapping and habitat modeling in the surrounding area and Targhee Planning Area indicates that conifer forest habitat is widespread. Further, the Teton Canyon Hazardous Fuels Reduction Project, approved in 2018, concluded that snag habitat is abundant in and around the area that encompasses GTR. Therefore, the Proposed Action *May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability*. Impacts to the three-toed woodpecker from Alternative 5 would be similar to those of the Proposed Action because expansion into Mono Trees would impact habitat that is of higher value because it provides undeveloped, dense forest cover. Under Alternatives 3 and 4, valuable habitat in the Mono Trees expansion area, where no development is proposed and limited human activity currently occurs, would be maintained.

Refer to **Appendix B** for a detailed analysis of *1997 Forest Plan* standards and guidelines under the proposed projects.

Under the *1997 Forest Plan*, Management Prescription – 4.2 *Special Use Permit Recreation Sites* prevails over other Management Prescriptions. This Management Prescription does not have any standards and guidelines that dictate snag requirements for habitat and currently encompasses the existing SUP. The proposed South Bowl (Alternatives 2 and 4) and Mono Trees (Alternatives 2 and 5) expansions currently contain Management Prescription 2.1.2 – *Visual Quality Maintenance* and Management Prescription 2.8.3 – *Aquatic Influence Zone*. There are no standards and guidelines pertaining to snags for Management Prescription 2.1.2 – *Visual Quality Maintenance*, but the requirement for Management Prescription 2.8.3 – *Aquatic Influence Zone* is to maintain dead and defective tree habitat at a 100 percent biological potential for woodpeckers. Since Alternatives 2, 4, and 5 would amend the *1997 Forest Plan* to change the Management Prescription in the expansion areas to Management Prescription 4.2 – *Special Use Permit Recreation Sites*, which supersedes Management Prescription 2.8.3 – *Aquatic Influence Zone*, snag requirements on up to 61.9 acres (about 56 acres in Mono Trees and 5.9 acres in South Bowl) would be dropped.

Although individual woodpeckers (including three-toed woodpeckers) would likely be impacted from not retaining the 100 percent Biological Potential requirement on up to 61.9 acres in the current Management Prescription 2.8.3 – *Aquatic Influence Zone* (within Mono Trees and South Bowl), the project would not cause a loss of viability for populations in the vicinity of the project area or the Teton Creek Principal Watershed. The rationale for this is that PDC would ensure impacts to snag nesting habitat is minimized, the proposed project would impact a very small percentage of the available Management Prescription 2.8.3 – *Aquatic Influence Zone* within the Teton Creek Principal Watershed (about one percent), snags and live trees are not limiting in the vicinity of the proposed project area, and habitat (particularly for three-toed woodpeckers) is widespread. Sufficient snags would still exist within the vicinity of the project area to support woodpecker populations. For example, the Teton Canyon Hazardous Fuels Reduction Project (decision signed in 2018) analyzed snags and live trees at the project level (which encompassed Teton

Canyon) and at the Teton Creek Principal Watershed Level. At both levels, the number of snags and live trees in all the Management Prescriptions (including Management Prescription 2.8.3 – *Aquatic Influence Zone*) far exceeded the 100 percent biological potential. For three-toed woodpeckers, the Targhee Forest Species Viability Report estimates that there are approximately 446,736 acres of potentially suitable habitat (habitat classified as very good, good, or moderate) for the species across the Targhee Planning Area (across all Management Prescriptions).²⁹⁶ Not maintaining the snag requirements on 61.9 acres of the Management Prescription 2.8.3 – *Aquatic Influence Zone* would not threaten population viability of woodpeckers (including three-toed woodpeckers) across the Targhee Planning Area.

Western Toad

The Proposed Action has the potential to impact western toad habitat. Changes to aquatic habitats have the potential to result in the direct mortality of western toads in their aquatic stages and an overall impact on recruitment (if the species were to occur). A total of 70.65 acres within the AIZ where aquatic habitat and adjacent uplands may provide suitable western road habitat will be impacted due to grading and/or vegetation removal for the proposed development. 66.78 of these acres are in the existing SUP, with most of the remaining acres lying within the Mono Trees expansion area and only 0.01 acres in the South Bowl expansion area. PDC and standards and guidelines from the *1997 Forest Plan* would reduce negative impacts to riparian and aquatic habitats with some potential to support western toads. Although clear cut tree removal for lifts and ski runs would result in a loss of habitat, the presence of suitable upland foraging habitat would remain in the project area, particularly within the AIZs. Selective thinning of trees for ski glades may result in improved habitat (in some areas) by partially opening the canopy, providing needed solar radiation for toads.²⁹⁷ As a result, the Proposed Action *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*.

Alternatives 4 and 5 would be similar to the Proposed Action in their impacts to the western toad. Alternative 3 has the potential to impact western toad upland habitat and to a lesser extent riparian and aquatic breeding habitat.

The *1997 Forest Plan* does not contain standards or guidelines specific to western toads. Analysis of consistency with standards and guidelines related to aquatic and riparian areas is included in **Appendix B**.

Columbia Spotted Frog

The impacts to the Columbia spotted frog from the action alternatives are similar to those described for the western toad. A total of 70.65 acres within the AIZ where aquatic habitat and adjacent uplands may provide suitable western road habitat will be impacted due to grading and/or vegetation removal for the proposed development. 66.78 of these acres are in the existing SUP, with most of the remaining acres lying within the Mono Trees expansion area and only 0.01 acres in the South Bowl expansion area. The exception is that there are less potential direct and indirect impacts to Columbia spotted frogs from vegetation/construction activities in the upland habitats. As a result, the Proposed Action *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*.

²⁹⁶ Miller et al. 2022

²⁹⁷ Bartelt et al. 2004

The *1997 Forest Plan* does not contain a guideline or standard that is specific to Columbia spotted frogs or amphibians in general. See the hydrology specialist report and project file for specific standards and guidelines pertaining to riparian areas and streams.

Yellowstone Cutthroat Trout

All of the action alternatives have the potential to indirectly impact Yellowstone cutthroat trout habitat outside of the project area (existing SUP, Mono Trees, and South Bowl). Proposed snowmaking, which is included in all of the alternatives, would increase snowmaking within the existing SUP. However, the proposed indirect impacts would not alter peak flows or water yields to a large enough degree that they would impact channel morphology function or cause additional erosion downstream in Teton Creek where Yellowstone cutthroat trout habitat exists.

The chairlift base proposed within Mono Trees under Alternatives 2 and 5, is located within the AIZ of Mill Creek. However, Design Criteria would be followed to minimize impacts to Mill Creek. There are no anticipated impacts to waterways within South Bowl. PDC and standards and guidelines from the *1997 Forest Plan* would reduce negative impacts within the AIZ and adjacent water bodies. Downstream Yellowstone cutthroat trout habitat outside of the project area in Teton Creek would continue to support the species and provide spawning areas. As a result, the Proposed Action *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*.

All alternatives would comply with Guideline 3 in the *1997 Forest Plan*, which applies to Yellowstone cutthroat trout. This guideline states: Within subwatersheds occupied by native cutthroat trout or designated as vital to meeting recovery goals, avoid management activities that are found, through interdisciplinary site-specific analysis, to either reduce habitat features below the expected values described previously or retard the rate of recovery of degraded habitat features. Refer to **Appendix B**. The action alternatives (Alternatives 2-5) may have limited indirect impacts to cutthroat trout habitat, which exists downstream of the project area. PDC, such as erosion mitigation practices and avoidance of riparian habitats, would mitigate impacts to downstream habitat and populations.

Townsend's Big-Eared Bat

The Proposed Action has the potential to impact Townsend's big-eared bat foraging habitat. The Proposed Action would directly impact approximately 779 acres of potential foraging habitat, constituting about 33 percent of the potential foraging habitat in the project area (existing SUP, Mono Trees, and South Bowl). Townsend's big-eared bat foraging habitat would likely be maintained in areas (about 505 acres) experiencing 40 percent vegetation removal for ski glades (due to the increase in edge habitat and the maintenance of the forest canopy). Areas experiencing 100 percent vegetation clearing or grading (274 acres) would most likely be lost as Townsend's big-eared bat habitat. Standards and guidelines from the *1997 Forest Plan* and PDC would reduce the likelihood of negative impacts to riparian habitats and from light pollution. As a result, the Proposed Action *May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*. Outside of foraging habitat within the existing SUP area, the proposed Mono Trees SUP area has the greatest amount of Townsend's big-eared bat foraging habitat. As such, Alternative 5 would have very similar impacts to the Proposed Action, while Alternative 4 (excluding Mono Trees) would have measurably less impacts, and Alternative 3 would have the least amount of impacts to Townsend's big-eared bat foraging habitat. All of the Action Alternatives would reach the same determination.

There are multiple standards and guidelines in the *1997 Forest Plan* (TNF 1997, pages 111-7,8; 111-23) that relate specifically to caves and abandoned mines that may contain suitable habitat for bats. The standards and guidelines do not apply to the proposed project since these caves and mines do not exist within the project area.

Western Bumble Bee

The Action Alternatives have the potential to create new foraging habitat and increase habitat heterogeneity in some areas, while also reducing potentially valuable forest cover in other areas. Tree clearing would create openings among forest habitat in some areas and promote growth of flowering plants, which could increase nectar availability for foraging bees. However, in other areas grading and clearing of large swaths of forest would result in an overall reduction in forest cover, where habitat for western bumble bees might be most valuable. Grading and construction activities could also potentially lead to mortality of hibernating queens or bumble bee nests. Alternative 2, the proposed action, has the highest potential to negatively impact western bumble bees because it would involve the most grading and removal of forest cover. However, proposed grading and clearing of large, forested areas in the Mono Trees and South Bowl expansion areas are minimal, and much of the proposed terrain development in these areas would clear small areas of trees and potentially diversify habitat availability and stimulate growth of flowering plants. Therefore, the action alternative involving the two proposed expansion areas (Alternative 2, 4, or 5) are not expected to be significantly more detrimental to western bumble bees than Alternative 3 (existing SUP only). Ample forest habitat and plant diversity in the vicinity of the project area will remain available for use by western bumble bees and is expected to persist into the future. Therefore, all alternatives *May Impact Individuals of Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability*.

Species of Local Concern

Moose

The proposed project would reduce suitable moose habitat in the project area and potentially degrade remaining habitat due to increased activity. Habitat is of higher value in the proposed Mono Trees and South Bowl expansion area than the existing SUP; therefore, impacts under Alternatives 2, 4, and 5 would be more severe. A small amount of potential moose winter habitat is mapped in the Mono Trees expansion area by the Teton County Focal Species Habitat Mapping project. Winter ranges and suitable winter habitat, however, are mapped throughout the Teton Creek and Leigh Creek watersheds in the vicinity surrounding the project. Given the small reduction in available habitat that would occur due to the proposed project compared to widespread availability of habitat in the vicinity and mobility of the species, all the action alternatives *would likely impact individuals, but not have significant impacts to the overall population*.

Mule Deer

Based on the direct, indirect, and cumulative impacts of the Action Alternatives across the project area, it is likely that proposed developments would result in a decrease in mule deer habitat and increased disturbance to mule deer in crucial winter-yearlong ranges within the vicinity of the project area. Impacts would be most substantial under the Proposed Action due to the extent of development and vegetation clearing proposed in the Mono Trees and South Bowl expansion areas (which contain higher quality, undeveloped habitat on south facing slopes that may be used by mule deer in difficult winter months or during migration). Alternative 3 would result in the lowest impacts of the action alternatives because the

current SUP has existing, high density development and human activity. Additionally, under Alternative 3, the Teton Canyon Hazardous Fuels Project, approved in 2018, may help offset habitat loss by improving habitat nearby in South Bowl and Teton Canyon. Development in South Bowl and/or Mono Trees under Alternatives 2, 4, and 5 would reduce the benefits of the Teton Canyon Hazardous Fuels Project because development and increased human activity would occur in or near treatment areas. The Mono Trees expansion area contains mule deer crucial winter-yearlong range indicating that Alternative 5 might be more impactful for mule deer than Alternative 4. However, game camera surveys indicate use of South Bowl as a movement corridor and impacts under Alternative 4 could alter movement patterns. Winter ranges and suitable winter habitat are mapped throughout the Teton Creek and Leigh Creek watersheds in the vicinity surrounding the project. Impacts under the proposed alternatives could impact individual survivability. However, given the small reduction in available habitat that would occur due to the proposed project, compared to widespread availability of habitat in the surrounding areas, the proposed action alternatives *would likely not have significant impacts to overall populations*.

Elk

Based on the direct, indirect, and cumulative impacts of the Action Alternatives across the project area, there would be a decrease in habitat for elk. Impacts would be most substantial under the Proposed Action, due to the extent of development and vegetation clearing proposed in the Mono Trees and South Bowl expansion areas, which contain higher quality, undeveloped habitat. Alternative 3 would result in the lowest impacts of the action alternatives because the current SUP has existing, high density development and human activity. Additionally, under Alternative 3, the previously approved Teton Canyon Hazardous Fuels Project may help offset habitat loss by improving habitat nearby in South Bowl and Teton Canyon for ungulates. Development in South Bowl and/or Mono Trees under Alternatives 2, 4, and 5 would reduce the benefits of the Teton Canyon Hazardous Fuels Project because development and increased human activity would occur in or near treatment areas (for the vegetation project). Alternative 5 would likely be more impactful for elk than Alternative 4 because more suitable elk habitat exists in the Mono Trees expansion area. Winter ranges and suitable winter habitat are mapped throughout the Teton Creek and Leigh Creek watersheds in the vicinity surrounding the project. Impacts under the proposed alternatives could impact individual survivability. However, given the small reduction in available habitat that would occur due to the proposed project, compared to widespread availability of habitat in the surrounding areas, the proposed action alternatives *would likely not have significant impacts to overall populations*.

American Pika, Pacific Marten, and Gray Wolf

The Action Alternatives would directly impact alpine and subalpine talus fields and associated meadows through habitat removal, disturbance, or habitat degradation from increased recreational use. Pika are already at risk due to increases in temperature and shifts in precipitation, thus cumulative effects of new trail development and/or increased recreation within their limited habitat in the project area and the adjacent JSW could directly impact individuals. Within the project area, South Bowl contains the highest quality habitat for the species, with undeveloped talus slopes and montane grasslands. Therefore, of the Proposed Action and Alternative 4, which include proposed ski area expansion into the South Bowl area, would most substantially impact American pika. Minimal impacts would occur under Alternatives 3 and 4 because the Mono Trees area is unlikely to provide valuable habitat for American pika, and the existing SUP has existing development and regular recreational use.

Habitat removal from clearing trees for trails and glades and increased human disturbance (associated with all of the action alternatives) may directly impact individual martens occurring within the project area. Cumulative impacts of any future timber harvest, firewood cutting, and development activities in the surrounding area could also impact martens. A marten was observed on a game camera 0.20 miles south of the project area in February 2021, while another individual was captured in the western end of the South Bowl Area in June 2021, indicating that they are present in the project area. The Mono Trees expansion area contains the most suitable habitat for pine martens, due to the amount of late seral conifer forests and ample snags and woody debris. Therefore, Alternatives 2 and 5, which include expansion into the Mono Trees area, have the highest potential to impact martens.

Proposed activities within the project area could cause disturbance that reduces the suitability of habitat for wolves in the area. A limitation in food sources in the project area for wolves could also occur if ungulate species are reduced in number or relocate outside of the project area. Alternative 3, no SUP expansion, would likely have minimal effects on wolf habitat usage because the existing SUP is heavily developed and sees high levels of human activity, which wolves tend to avoid. Impacts to wolves would be most substantial if expansion of the SUP were to occur under Alternatives 2, 4, or 5.

For the American pika, Pacific marten, and gray wolf the Action Alternatives could impact individuals, but is not likely to impact at the population scale.

Migratory Birds

All the Action Alternatives would result in a decrease in habitat available for nesting migratory birds. Construction activities associated with the Action Alternatives during the spring and summer nesting season could disturb nesting adults, if nests occur within the zone of influence of the projects. If disturbance occurs prior to fledging of the nestlings, it may result in abandonment of the nest by adults, and subsequent mortality of nestlings. The clearing and thinning of forest habitat for trails, lifts, and glades may also result in the removal of nest sites. Specifically, under Alternative 4, rock outcrops within South Bowl may provide potential nesting habitat for golden eagles, while alpine meadows near rock talus and cliff could support other migratory birds such as the black rosy-finch. PDC would minimize the likelihood of impacts to nesting birds: *“Vegetation clearing activities are generally planned to occur outside of the migratory bird nesting period, which is typically from May 15 to July 15. If vegetation clearing activities must occur during the nesting period, U.S. Forest Service personnel (or individuals deemed qualified by the Forest Service) would conduct nest searches in appropriate habitats prior to the commencement of the vegetation clearing activities. The exact area to be surveyed would be based on the scope of the surface disturbance activities, the habitat to be disturbed, and the potential species to be impacted. If nesting migratory birds occur, the Forest Service would delineate appropriate buffers and halt construction within the buffers until the nesting is complete.”* However, some bird species may cease nesting within areas of the proposed projects (after implementation) due to disturbance and habitat loss/degradation. Therefore, all the action alternatives have the potential to impact individuals at the local level; however, all action alternatives are unlikely to substantially impact populations. Alternative 2 would impact the largest acreage of suitable nesting habitat including forested habitat in the existing SUP, Mono Trees, and South Bowl; meadow habitat in the existing SUP and South Bowl; and talus and cliff areas in South Bowl. Alternative 4, with proposed expansion into South Bowl, would likely be less impactful than Alternative 5 (with the proposed Mono Trees expansion) because the Mono Trees expansion area is larger, and more acres of suitable habitat would be impacted than in South Bowl. Alternative 3, no SUP expansion, would cause the least amount of disturbance to migratory bird

populations out of the action alternatives. Please refer to Section 6 within the Wildlife BE for more specifics on impacts to migratory birds as the result of the Action Alternatives.

3.13.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. Projects identified in **Appendix A** are expected to cumulatively have short- and long-term effects on wildlife habitat overlapping the project area as indicated by species.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for wildlife and fish resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis of fish and wildlife resources varies by species and is further described in the Wildlife BE for each species.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects study area, the reader is referred to **Appendix A** in the DEIS. Past ski area, TNF, and other local or county projects have been incorporated and analyzed in this document as part of the Affected Environment discussion. Projects that could have cumulative impacts on wildlife are analyzed in the following discussion.

Species specific cumulative effects analyses are contained within the Wildlife BA and Wildlife BE, the following discussion is intended to summarize how various types of cumulative effects projects relate to the overall wildlife resource.

Increased development on private lands in Idaho and Wyoming in Teton County has caused habitat fragmentation or reduced the availability of habitat for some species considered in this analysis. Teton Valley and the cities of Victor and Driggs have seen substantial growth in recent years, and though most development has occurred on the valley floor, reduction of riparian, grassland, shrubland, ranchland, and forested habitats has occurred. Increased development of homes and some municipal facilities in the foothills and mountain slopes of the Tetons, both in Teton County, Idaho and Wyoming, has increased the fragmentation of shrubland and forested habitats (e.g., aspen, Douglas fir, and spruce-fir) that may have previously provided habitat or movement corridors for some wildlife species. Additionally, increased traffic on highways and high-speed roadways, including Highway 33 and Ski Hill Road, further fragment wildlife habitat and result in more frequent wildlife-vehicle collisions. Teton Valley is expected to continue to grow with private land development increasing into the foreseeable future and more vehicles and recreationists are expected to occur in areas abutting the GTR SUP.

Past development of GTR as a ski area and summer recreation destination converted forested habitats (including aspen/conifer, Douglas fir, and spruce-fir) into grassland and forb cover within the existing SUP. Forest conversion and increased development density have reduced the availability of suitable

habitat for some wildlife species and potentially contributed to population declines, while for other species, habitat conversions may have had little impact.

Current recreation activity within the existing GTR SUP, and on National Forest System and National Park lands in the vicinity, causes certain wildlife species to avoid areas of suitable habitat. Other species that are not as averse to human activity remain less impacted. Likely increases in future recreation within the GTR SUP, and neighboring National Forest System and National Park lands, would result in greater habitat loss/displacement for a variety of sensitive species.

Some of the currently proposed projects would occur within the existing SUP where habitat is already fragmented due to ski area development and human activity. The action alternatives would result in additional removal of forested habitats within the existing SUP, but projects within the SUP are not expected to substantially add to the cumulative impacts for many wildlife species. Removal of forested habitats and increased presence of human activity that would result from proposed expansions into the South Bowl and Mono Trees areas have the potential to contribute to cumulative effects for several wildlife species. Please refer to the Wildlife BE for a more in-depth analysis of cumulative effects in both the winter and summer by specific species.

Forest Health and Fuels treatment projects, such as Teton Canyon Hazardous Fuels Reduction Project, which was approved in 2018 and initiated in 2019, have the potential to impact species behavior and habitat. The previously approved project aims to reduce fuel loadings and the risk of severe wildfire and to improve wildlife habitat by increasing forest age class diversity within a 5,325-acre area in the Teton Creek drainage.²⁹⁸ This particularly pertains to various avian species that were studied as part of this analysis, as well as big game species. These types of projects may result in the enhancement of some habitat and loss of other habitat. No cumulative projects have been identified that would result in insufficient habitat to support a species considered in this analysis.

3.13.6 Irreversible and Irretrievable Commitments of Resources

Tree removal related to the proposed projects would represent an irretrievable effect to some habitat for some *federally listed endangered, threatened, proposed, or candidate and/or Forest Service Region 4 sensitive fish and wildlife species*, and species of local concern, as well as migratory birds within the SUP area. However, this is not considered an irreversible commitment because habitat (vegetation) is a renewable resource.

3.14 Geology and Soils

3.14.1 Scope of the Analysis

This analysis summarizes the *Geology and Soils Technical Report for the Grand Targhee Master Development Plan Environmental Impact Statement* (Geology and Soils Technical Report), which is located in the project file. The [Geology and Soils Technical Report](#) utilized information from the *Rockfall and Landslide Hazards to the Proposed South Bowl Lift, Grand Targhee Resort, Teton County, Wyoming Report* (Rockfall and Landslide Hazards Report), the *Impacts on Groundwater From the Proposed 2021 Expansion, Grand Targhee Resort, Teton County, Wyoming Report* (Groundwater Report),

²⁹⁸ USDA Forest Service 2018d

the *Custom Soil resource Report for Targhee National Forest, Idaho and Wyoming* (Soil Report), the *Granite Basin Quadrangle*, and the *Tetonia Quadrangle*, which are also available in the project file.²⁹⁹

The project area for geology and soil resources corresponds to areas within the GTR SUP area and the proposed SUP expansion areas where approximately 935.6 acres of ground disturbance would occur as a result of the proposed projects. Disclosed in this section are soil types, estimates of existing and future soil erosion and compaction characteristics, and an assessment of slope instability in the project area.

3.14.2 Federal, State, and Local Policy and Guidance

The *1997 Forest Plan* identifies the following goals and guidelines for the geology and soils resource that are relevant to this analysis.³⁰⁰ Refer to the *1997 Forest Plan* for a complete list of standards, guidelines, and goals.

Forest-Wide Soil Goals

- Long-term soil productivity is sustained by retaining fine organic matter and woody residue on activity areas.

Forest-Wide Guidelines - Soil Quality/Forested Ecosystems

- Generally strive to maintain fine organic matter over at least 50 percent of the area. The preference is for fine organic matter to be undisturbed, but if disturbed, it should be of sufficient quantity and quality to avoid detrimental nutrient cycle deficits. If the soil and potential adjust minimum amounts to reflect potential soil and vegetation capability.
- Woody Residue Requirements for Materials three inches in Diameter or larger - Sustain site productivity by providing the [following] minimum amounts of woody residue dispersed on the site [from the Woody Residue Requirement for Woody Materials \geq 3 Inches in Diameter table in the *1997 Forest Plan*].
- During site preparation treatments, strive to avoid disturbing concentrated areas of soil wood.

Prescription 4.2 Special Use Authorization Recreation Sites – Physical Elements/Soil and Water

- Avoid new construction on unstable or highly erodible soils.

3.14.3 Affected Environment

GEOLOGY

The project area lies on sedimentary rocks (limestones and shales) deposited during the Paleozoic Era (541 million years ago to 251 million years ago, or 541 to 251 Ma). To the east lie PreCambrian metamorphic and igneous rocks of the Teton Range core. To the west much younger volcanic rocks lie atop the Paleozoic limestone and shales, deposited by volcanic eruptions associated with the Island Park caldera. Almost all of GTR lies on the Madison Limestone (early Mississippian Period of the late Paleozoic Era), however the base area lies on a much younger paleochannel deposit (Hominy Peak

²⁹⁹ Geo-Haz Consulting, Inc. 2021a; NRCS 2022; Phillips et al. 2013; Reed and Love 1972

³⁰⁰ USDA Forest Service 1997

Formation) eroded into the Madison during the Eocene Period (ca. 34-59 Mas). The channel that was formed was filled with volcanic debris from the Absaroka Mountains. The sedimentary rocks have an aggregate thickness of 2,700 feet, with an additional 900 feet of younger volcanics atop them.³⁰¹

Geologic maps of the project area are available in the Rockfall and Landslide Hazards Report, which is included in the project file. South of the project area and Teton Creek, the Madison Limestone (Mm, Mississippian) is overlain by the Permo-Pennsylvanian Tensleep and Amsden Formations (iPta). Therefore, the entire thickness of the Mm is preserved. Conversely, the GTR ridge between Teton Creek and South Leigh Creek has experienced erosion that has removed iPta and the upper half of Mm. Similarly, north of South Leigh Creek, erosion of the Paleozoic section has been even more severe, removing almost all of Mm, Darby Formation, and Bighorn Dolomite, uncovering a large outcropping of Cambrian rocks. This process suggests that the west flank of the Teton Range north of Teton Canyon, including the project area, has been warped upward relative to the rest of the Range. This upwarp caused erosion of the uppermost Paleozoic strata (iPta), and partial erosional planing off of Mm.

The Rockfall and Landslide Hazards Report also contains a review of existing mapping and imagery, coupled with field reconnaissance, that was used to examine slope stability within the project area. This includes an assessment of mapped landslide deposits and rockfalls within the South Bowl area. Refer to the Rockfall and Landslides Hazards Report for additional information.

SOILS

Soil Map Units and Characteristics

There are 5 soil map units and one rock outcrop within the analysis area.³⁰² All of the soil map units were identified from the **Soil Report**. The acreages of the map units and their corresponding classifications that occur within the analysis area are listed in **Table 3.14-1**.

³⁰¹ Geo Haz Consulting Inc. 2021b

³⁰² NRCS 2022

Table 3.14-1. Acreages of Map Units within the Analysis Area

Map Unit Symbol	Map Unit Name	Erosion Hazard (Kw Factor)	Soil Compaction Hazard	Area (acres)	
				NFS Lands	Private
34	Rock outcrop	Not rated	Not rated	3	0
1170	ABLA/Tall Forb Yodal, 4 to 35 percent slopes	Moderate (0.28)	Medium	62.5	0
1172	ABLA/ACGL Gany-ABLA/THOC Katpa-PSMEG/BERE, SYOR2 Fritz complex, 40 to 70 percent slopes	Slight (0.05)	Medium	302.2	0.7
1216	ABLA/ACGL Koffgo-ABLA/ACGL Rhylow-ARTRV-SYOR2/FEID Povey complex, 35 to 60 percent slopes	Slight (0.17)	Medium	421.8	0.1
1315	Edgway-Koffgo-Povey association, 15 to 50 percent slopes	Moderate (0.43)	Medium	254.8	10.4
1593	ABLA/VAGL, PAMY Koffgo, 30 to 60 percent slopes	Moderate (0.37)	Medium	0.2	0
Total				1,044.5	11.2

Note: Table 3.14-1 includes map units where proposed disturbance would occur. Map units within the GTR SUP area and proposed SUP expansion areas that do not contain proposed disturbance were excluded (Map Unit 1106).

Source: SE Group 2022

All soil map units listed above would be affected by the action alternatives. Soil types overlapping the proposed project locations and areas where disturbance would occur are classified as predominantly finer, loamy soils. For both NFS and Private lands, the interpretations for soil erosion factors and soil compaction potential were taken from the online Web Soil Survey of the Targhee National Forest.³⁰³

The soil erosion factor used in this analysis is the Kw Factor, which indicates the erodibility of the whole soil and the susceptibility of a soil to sheet and rill erosion by water. The estimates are modified by the presences of rock fragments. Kw Factor values range from 0.02 to 0.69. Generally, a higher rating means a soil is more susceptible to erosion. This analysis has organized the ratings into slight, moderate, and severe erosion hazards. A slight rating (0.02-0.20) means little, or no erosion is likely; moderate (0.21-0.49) means some erosion is likely, occasional maintenance may be needed, and simple erosion control measures are needed; severe (0.50-0.69) means substantial erosion can be expected, and costly erosion control measures are needed. Soils in the project area range from Kw Factors of 0.05 to 0.43 which are slight to moderate ratings, with the majority of the soil units being rated as moderate. Approximately 724.8 acres (68.7 percent) of the soil within the analysis area are rated as slight and 327.9 acres (31.1

³⁰³ NRCS 2022

percent) are rated as moderate. Approximately 3 acres (0.2 percent), in areas with rock outcrops, are not rated.

Soil compaction rating describes the risk of inducing soil compaction through timber harvest or recreation activities. The physical, chemical, and biological effects of compaction tend to restrict plant growth, reduce infiltration, and increase surface runoff, all of which encourages erosion. Nearly all map units have a medium potential for compaction (1052.7 acres, 99.7 percent). The remaining soil map unit (3.0 acres, 0.3 percent), in areas with rock outcrops, is not rated.

3.14.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, none of the new winter and multi-season recreation projects included in the action alternatives would occur. GTR would continue to operate under its current design and capacity. Soil losses from erosion due to rainfall, runoff, and wind would continue to occur at existing rates. Most soil erosion would likely continue to be from existing roads and from areas with a low vegetative cover. These impacts could be direct, such as effects on the freeze/thaw cycles of the uppermost soil layers, or indirect, such as impacts on hydrology that could affect erosion.

Geology and soil resources on NFS lands would continue to be managed as under current conditions. The Forest Service would continue to be responsible for managing the soil resources so that the physical, chemical, and biological processes and functions of the soil are maintained or enhanced.

ALTERNATIVE 2 – PROPOSED ACTION

Direct Impacts

Direct impacts to soil characteristics under the Proposed Action would include a permanent loss of soil resources due to ground disturbing activities, an increase in soil erosion and sedimentation, and changes to soil physical and chemical characteristics reducing soil productivity. **Table 3.14-2** displays the overall acres of disturbance for each soil map unit.

Table 3.14-2. Acreages of Map Units and Disturbance – Proposed Action

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
1170	ABLA/Tall Forb Yodal, 4 to 35 percent slopes	27.4	31.7	59.1
1172	ABLA/ACGL Gany-ABLA/THOC Katpa-PSMEG/BERE, SYOR2 Fritz complex, 40 to 70 percent slopes	81.9	157.8	239.7
1216	ABLA/ACGL Koffgo-ABLA/ACGL Rhylow-ARTRV-SYOR2/FEID Povey complex, 35 to 60 percent slopes	45	323.7	368.7
1315	Edgway-Koffgo-Povey association, 15 to 50 percent slopes	144.5	120.2	264.7
1593	ABLA/VAGL, PAMY Koffgo, 30 to 60 percent slopes	0.2	0	0.2
34	Rock outcrop	2.5	0.7	3.2
Total		301.5	634.1	935.6

Source: SE Group 2022

Soil map units 1216, 1172, and 1315 would be the most impacted by disturbance associated with the proposed projects. The soil disturbance by grading and by both vegetation removal and grading would displace the organic layer and the soil surface layer, at a minimum. All soil map units in the project area would be impacted by this type of disturbance (refer to **Table 3.14-2**). The construction of roads and facilities, all utility construction, alternative winter activities, lift construction, installation of snowmaking, temporary and permanent mountain construction roads, summer activities, avalanche mitigation infrastructure, and some ski trails would require grading in some capacity. Topsoil, organic material, and forest floor material would be displaced and negatively impacted as a result of grading. These impacts would be permanent in areas with permanent proposed infrastructure (e.g., lifts, permanent mountain construction roads, guest facilities, etc.). Under the Proposed Action, up to 301.5 acres of topsoil and/or organic material would be directly impacted by grading or vegetation removal and grading. However, PDC detailed in **Table 2.4-1** would help minimize these impacts. Specifically, this includes the following PDC: 1) During construction, maintenance and operations, stockpile topsoil to the extent possible to maintain organic matter; and 2) Prior to construction, soil surveys and measurements of thicknesses of A or organic horizons would be completed within the disturbance area to ensure no net loss of soil organic matter. GTR would hire a qualified soil scientist to complete soil surveys and measurements. Reports would be submitted as specified in the Construction Plan.

Under the Proposed Action, up to 634.1 acres of topsoil and/or organic material could be directly impacted by vegetation clearing only, specifically this includes the implementation of glades, groomable glades, and terrain development projects without grading. It is important to note that areas where vegetation removal without grading is proposed would experience substantially less soil disturbance than

graded areas. As described in **Section 2.3**, tree removal methods may require burning in gladed terrain if alternative vegetation removal methods are not possible. This could further damage the topsoil, organic material, and forest floor material in addition to changing the soil physical and chemical properties. However, with implementation of PDC, including locating areas of chipping and burning over packed snow and/or frozen ground when feasible and stockpiling organic matter prior to burning, these impacts would be lessened.

The proposed projects would have direct impacts on soil map units with both slight and moderate erosion hazard through grading and a combination of grading and tree removal. Implementation of the Proposed Action would require approximately 172.1 acres of grading in areas with moderate erosion hazard and approximately 126.9 acres of grading in areas with slight erosion hazard. This does not include disturbance that would occur within the rock outcrop soil unit. The areas with soils rated with a moderate erosion hazard rating are primarily located in Rick's Basin and the proposed South Bowl expansion. Soil losses and sedimentation due to erosion would occur for as long as the area is disturbed but would return to natural rates once vegetation is re-established and stabilizes reclaimed areas, in about two to five years following reclamation. Steep and south- and west-facing cut slopes may require more than five years for the vegetation ground cover to reach pre-disturbance levels without soil amendments.

Lastly, due to mixing of soil horizons, soil profile characteristics and soil productivity would be drastically changed over pre-construction conditions. The loss of soil resources would be long-term and permanent.

Indirect Impacts

Indirect impacts to soil characteristics under the Proposed Action would include a loss of soil from erosion associated with an increase in mountain biking and hiking activities, year-round vehicle traffic on new access roads, additional snowmaking infrastructure and snowmelt (refer to the **Hydrology Technical Report**) and from maintenance of these trails, access roads, and other facilities. The additional traffic on access roads and new mountain biking, hiking, and multi-use trails would most likely be the major indirect contributors to the increase in soil erosion. Further, trail building and road construction activities in the 1216, 1170, and 1315 soil types, which overlap the Darby and Hominy Peak formations, could result in the release of fine sediment into streams. As described under the Affected Environment discussion, the composition of these formations and their proximity to waterways within the project area have the potential to exacerbate erosion impacts. These areas would need to be stabilized quickly before the next rain or snowmelt season and would require additional PDC. Potential impacts associated with disturbances over these formations are further described in the **Groundwater Report** and site specific PDC have been developed to address this potential issue.

Consistency with the 1997 Forest Plan

Refer to **Section 3.14.2** for relevant guidelines that apply to the geology and soils resource. Soils PDC are intended to minimize soil impacts so that projects under the Proposed Action comply with applicable *1997 Forest Plan* guidelines. As previously stated, the *1997 Forest Plan* does not contain standards for the geology and soils resource that are relevant to this analysis. The following PDC have been included in order to comply with Soils Guidelines 1, 2, and 3: 1) During construction, maintenance and operations, stockpile topsoil to the extent possible to maintain organic matter; 2) Prior to construction, soil surveys and measurements of thicknesses of A or organic horizons would be completed within the disturbance area to ensure no net loss of soil organic matter. GTR would hire a qualified soil scientist to complete soil

surveys and measurements. Reports would be submitted as specified in the Construction Plan; 3) Ground cover, as a combination of revegetation, organic amendments, and mulch applications, would restore depths of soil A and/or organic ground cover; and 4) During site preparation treatments, avoid disturbing concentrated areas of soil wood³⁰⁴ to the greatest degree feasible. These measures have been assigned to maintain fine organic matter in disturbed areas and avoid detrimental nutrient cycle deficits (Guideline 1). These measures would also ensure that disturbed areas sustain woody residue requirements for materials three inches in diameter or larger (Guideline 2). Lastly, these measures would help avoid disturbing concentrated areas of soil wood (Guideline 3). With the implementation of PDC, the proposed projects under the Proposed Action are expected to comply with the relevant guidelines from the *1997 Forest Plan*. As previously stated, the *1997 Forest Plan* does not contain standards for the geology and soils resource that are relevant to this analysis.

ALTERNATIVE 3 – NO SUP EXPANSION

Direct Impacts

Direct impacts to soil characteristics under Alternative 3 would include a permanent loss of soil resources due to ground disturbing activities, an increase in soil erosion and sedimentation, and changes to soil physical and chemical characteristics reducing soil productivity. **Table 3.14-3** displays the overall acres of disturbance for each soil map unit.

Table 3.14-3. Acreages of Map Units and Disturbance – Alternative 3

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
1170	ABLA/Tall Forb Yodal, 4 to 35 percent slopes	20.6	24.8	45.4
1172	ABLA/ACGL Gany-ABLA/THOC Katpa-PSMEG/BERE, SYOR2 Fritz complex, 40 to 70 percent slopes	76.1	138.1	214.2
1216	ABLA/ACGL Koffgo-ABLA/ACGL Rhylow-ARTRV-SYOR2/FEID Povey complex, 35 to 60 percent slopes	20.5	121.3	141.8
1315	Edgway-Koffgo-Povey association, 15 to 50 percent slopes	140.5	79.1	219.6
1593	ABLA/VAGL, PAMY Koffgo, 30 to 60 percent slopes	0.2	0	0.2
34	Rock outcrop	2.5	0.7	3.2
Total		260.4	364	624.4

³⁰⁴ When wood becomes incorporated into the soil and forest floor. It can be described as the brown, crumbly decaying wood.

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
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Source: SE Group 2022

Soil map units 1170, 1172, 1216, and 1315 would be the most impacted by activities resulting in disturbance. The soil disturbance by grading and by both vegetation removal and grading would displace the organic layer and the soil surface layer, at a minimum. These areas would include all project components. The construction of roads and facilities, all utility construction, alternative winter activities, lift construction, installation of snowmaking, temporary and permanent mountain construction roads, summer activities, avalanche mitigation infrastructure, and some ski trails would require grading in some capacity. Topsoil, organic material, and forest floor material would be displaced and negatively impacted as a result of grading. These impacts would be permanent in areas with permanent proposed infrastructure (e.g., lifts, permanent mountain construction roads, guest facilities, etc.). Under Alternative 3, up to 260.4 acres of organic material would be directly impacted by grading or vegetation removal and grading. However, PDC detailed in **Table 2.4-1** and described under the Proposed Action would help minimize these impacts.

Under the Alternative 3, up to 364 acres of topsoil and/or organic material could be directly impacted by vegetation clearing only, specifically this includes the implementation of glades, groomable glades, and terrain development projects without grading. It is important to note that areas where vegetation removal without grading is proposed would experience substantially less soil disturbance than graded areas. As described in **Section 2.3**, tree removal methods may require burning in gladed terrain if alternative vegetation removal methods are not possible. This could further damage the topsoil, organic material, and forest floor material in addition to changing the soil physical and chemical properties. However, with implementation of PDC described under the Proposed Action and in **Table 2.4-1**, these impacts would be lessened.

The proposed projects would have direct impacts on soil map units with both slight and moderate erosion hazard through grading and a combination of grading and tree removal. Implementation of Alternative 3 would require approximately 161.3 acres of grading in areas with moderate erosion hazard and approximately 96.6 acres of grading in areas with slight erosion hazard. This does not include disturbance that would occur within the rock outcrop soil unit. Soil losses and sedimentation due to erosion would occur for as long as the area is disturbed but would return to natural rates once vegetation is re-established and stabilizes reclaimed areas, in about two to five years following reclamation. Steep and south- and west-facing cut slopes may require more than five years for the vegetation ground cover to reach pre-disturbance levels without soil amendments.

Lastly, due to mixing of soil horizons, soil profile characteristics and soil productivity would be drastically changed over pre-construction conditions. The loss of soil resources would be long-term and permanent.

Indirect Impacts

Indirect impacts to soil characteristics under the Alternative 3 would include a loss of soil from erosion associated with an increase in mountain biking and hiking activities, year-round vehicle traffic on new access roads, additional snowmaking infrastructure and snowmelt (refer to the **Hydrology Technical**

Report) and from maintenance of these trails, access roads, and other facilities. The additional traffic on access roads and new mountain biking, hiking, and multi-use trails would most likely be the major indirect contributors to the increase in soil erosion. Further, trail building and road construction activities in the 1216, 1170, and 1315 soil types, which overlap the Darby and Hominy Peak formations, could result in the release of fine sediment into streams. As described under the Affected Environment discussion, the composition of these formations and their proximity to waterways within the project area have the potential to exacerbate erosion impacts. These areas would need to be stabilized quickly before the next rain or snowmelt season and would require additional PDC. Potential impacts associated with disturbances over these formations are further described in the **Groundwater Report** and site specific PDC have been developed to address this potential issue.

Consistency with the 1997 Forest Plan

With the implementation of geology and soils PDC discussed under the Proposed Action previously, the proposed projects under Alternative 3 are expected to comply with all relevant guidelines addressed in the *1997 Forest Plan*. As previously stated, the *1997 Forest Plan* does not contain standards for the geology and soils resource that are relevant to this analysis. Refer to the **Soils Technical Report** for additional information about PDC intended to address *1997 Forest Plan* guidelines for geology and soils.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Direct Impacts

Direct impacts to soil characteristics under the Alternative 4 would include a permanent loss of soil resources due to ground disturbing activities, an increase in soil erosion and sedimentation, and changes to soil physical and chemical characteristics reducing soil productivity. **Table 3.14-4** displays the overall acres of disturbance for each soil map unit.

Table 3.14-4. Acreages of Map Units and Disturbance – Alternative 4

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
1170	ABLA/Tall Forb Yodal, 4 to 35 percent slopes	20.6	24.8	45.4
1172	ABLA/ACGL Gany-ABLA/THOC Katpa-PSMEG/BERE,SYOR2 Fritz complex, 40 to 70 percent slopes	81.9	157.8	239.7
1216	ABLA/ACGL Koffgo-ABLA/ACGL Rhylow-ARTRV-SYOR2/FEID Povey complex, 35 to 60 percent slopes	28.6	130.3	158.9
1315	Edgway-Koffgo-Povey association, 15 to 50 percent slopes	140.5	79.1	219.6
1593	ABLA/VAGL,PAMY Koffgo, 30 to 60 percent slopes	0.2	0	0.2
34	Rock outcrop	2.5	0.7	3.2

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
Total		260.4	364	667

Source: SE Group 2022

Soil map units 1172, 1216, and 1315 would be the most impacted by disturbance associated with the proposed projects. The soil disturbance by grading and by both vegetation removal and grading would displace the organic layer and the soil surface layer, at a minimum. All soil map units in the project area would be impacted by this type of disturbance (refer to **Table 3.14-4**). The construction of roads and facilities, all utility construction, alternative winter activities, lift construction, installation of snowmaking, temporary and permanent mountain construction roads, summer activities, avalanche mitigation infrastructure, and some ski trails would require grading in some capacity. Topsoil, organic material, and forest floor material would be displaced and negatively impacted as a result of grading. These impacts would be permanent in areas with permanent proposed infrastructure (e.g., lifts, permanent mountain construction roads, guest facilities, etc.). Under Alternative 4, up to 260.4 acres of organic material would be directly impacted by grading or a combination of vegetation removal and grading. However, PDC detailed in **Table 2.4-1** and described under the Proposed Action would help minimize these impacts.

Under the Alternative 4, up to 364 acres of topsoil and/or organic material could be directly impacted by vegetation clearing only, specifically this includes the implementation of glades, groomable glades, and terrain development projects without grading. It is important to note that areas where vegetation removal without grading is proposed would experience substantially less soil disturbance than graded areas. As described in **Section 2.3**, tree removal methods may require burning in gladed terrain if alternative vegetation removal methods are not possible. This could further damage the topsoil, organic material, and forest floor material in addition to changing the soil's physical and chemical properties. However, with implementation of PDC, including locating areas of chipping and burning over packed snow and/or frozen ground when feasible and stockpiling organic matter prior to burning, these impacts would be lessened.

The proposed projects would have direct impacts on soil map units with both slight and moderate erosion hazard through grading and a combination of grading and tree removal. Implementation of the Proposed Action would require approximately 161.3 acres of grading in areas with moderate erosion hazard and approximately 110.5 acres of grading in areas with slight erosion hazard. This does not include disturbance that would occur within the rock outcrop soil unit. Soil losses and sedimentation due to erosion would occur for as long as the area is disturbed but would return to natural rates once vegetation is re-established and stabilizes reclaimed areas, in about two to five years following reclamation. Steep and south- and west-facing cut slopes may require more than five years for the vegetation ground cover to reach pre-disturbance levels without soil amendments.

Lastly, due to mixing of soil horizons, soil profile characteristics and soil productivity would be drastically changed over pre-construction conditions. The loss of soil resources would be long-term and permanent.

Indirect Impacts

Indirect impacts to soil characteristics under Alternative 4 would include a loss of soil from erosion associated with an increase in mountain biking and hiking activities, year-round vehicle traffic on new access roads, additional snowmaking infrastructure and snowmelt (refer to the **Hydrology Technical Report**) and from maintenance of these trails, access roads, and other facilities. The additional traffic on access roads and new mountain biking, hiking, and multi-use trails would most likely be the major indirect contributors to the increase in soil erosion. Further, trail building and road construction activities in the 1216, 1170, and 1315 soil types, which overlap the Darby and Hominy Peak formations, could result in the release of fine sediment into streams. As described under the Affected Environment discussion, the composition of these formations and their proximity to waterways within the project area have the potential to exacerbate erosion impacts. These areas would need to be stabilized quickly before the next rain or snowmelt season and would require additional PDC. Potential impacts associated with disturbances over these formations are further described in the **Groundwater Report** and site specific PDC have been developed to address this potential issue.

Consistency with the 1997 Forest Plan

With the implementation of geology and soils PDC discussed under the Proposed Action previously, the proposed projects under Alternative 4 are expected to comply with all relevant guidelines addressed in the *1997 Forest Plan*. As previously stated, the *1997 Forest Plan* does not contain standards for the geology and soils resource that are relevant to this analysis. Refer to the **Soils Technical Report** for additional information about PDC intended to address *1997 Forest Plan* guidelines for geology and soils.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Direct Impacts

Direct impacts to soil characteristics under the Alternative 5 would include a permanent loss of soil resources due to ground disturbing activities, an increase in soil erosion and sedimentation, and changes to soil physical and chemical characteristics reducing soil productivity. **Table 3.14-5** displays the overall acres of disturbance for each soil map unit.

Table 3.14-5. Acreages of Map Units and Disturbance – Alternative 5

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
1170	ABLA/Tall Forb Yodal, 4 to 35 percent slopes	27.4	31.7	59.1
1172	ABLA/ACGL Gany-ABLA/THOC Katpa-PSMEG/BERE,SYOR2 Fritz complex, 40 to 70 percent slopes	76.1	138.1	214.2
1216	ABLA/ACGL Koffgo-ABLA/ACGL Rhylow-ARTRV-SYOR2/FEID Povey complex, 35 to 60 percent slopes	36.8	314.6	351.4

Map Unit	Map Unit Name	Acres Disturbed by Grading/Veg Clearing and Grading	Acres Disturbed by Vegetation Clearing Only	Total Disturbance
1315	Edgway-Koffgo-Povey association, 15 to 50 percent slopes	144.5	120.2	264.7
1593	ABLA/VAGL,PAMY Koffgo, 30 to 60 percent slopes	0.2	0	0.2
34	Rock outcrop	2.5	0.7	3.2
Total		287.5	605.3	892.8

Source: SE Group 2022gl

Soil map units 1170, 1172, 1216, and 1315 would be the most impacted by disturbance associated with the proposed projects. The soil disturbance by grading and by both vegetation removal and grading would displace the organic layer and the soil surface layer, at a minimum. All soil map units in the project area would be impacted by this type of disturbance (refer to **Table 3.14-5**). The construction of roads and facilities, all utility construction, alternative winter activities, lift construction, installation of snowmaking, temporary and permanent mountain construction roads, summer activities, avalanche mitigation infrastructure, and some ski trails would require grading in some capacity. Topsoil, organic material, and forest floor material would be displaced and negatively impacted as a result of grading. These impacts would be permanent in areas with permanent proposed infrastructure (e.g., lifts, permanent mountain construction roads, guest facilities, etc.). Under Alternative 5, up to 287.5 acres of organic material would be directly impacted by grading or vegetation removal and grading. However, PDC detailed in **Table 2.4-1** and described under the Proposed Action would help minimize these impacts.

Under Alternative 5, up to 605.3 acres of topsoil and/or organic material could be directly impacted by vegetation clearing only, specifically this includes the implementation of glades, groomable glades, and terrain development projects without grading. It is important to note that areas where vegetation removal without grading is proposed would experience substantially less soil disturbance than graded areas. As described in **Section 2.3**, tree removal methods may require burning in gladed terrain if alternative vegetation removal methods are not possible. This could further damage the topsoil, organic material, and forest floor material in addition to changing the soil physical and chemical properties. However, with implementation of PDC, including locating areas of chipping and burning over packed snow and/or frozen ground when feasible and stockpiling organic matter prior to burning, these impacts would be lessened.

The proposed projects would have direct impacts on soil map units with both slight and moderate erosion hazard through grading and a combination of grading and tree removal. Implementation of Alternative 5 would require approximately 172.1 acres of grading in areas with moderate erosion hazard and approximately 112.9 acres of grading in areas with slight erosion hazard. This does not include disturbance that would occur within the rock outcrop soil unit. Soil losses and sedimentation due to erosion would occur for as long as the area is disturbed but would return to natural rates once vegetation is re-established and stabilizes reclaimed areas, in about two to five years following reclamation. Steep

and south- and west-facing cut slopes may require more than five years for the vegetation ground cover to reach pre-disturbance levels without soil amendments.

Lastly, due to mixing of soil horizons, soil profile characteristics and soil productivity would be drastically changed over pre-construction conditions. The loss of soil resources would be long-term and permanent.

Indirect Impacts

Indirect impacts to soil characteristics under Alternative 5 would include a loss of soil from erosion associated with an increase in mountain biking and hiking activities, year-round vehicle traffic on new access roads, additional snowmaking infrastructure and snowmelt (refer to the **Hydrology Technical Report**) and from maintenance of these trails, access roads, and other facilities. The additional traffic on access roads and new mountain biking, hiking, and multi-use trails would most likely be the major indirect contributors to the increase in soil erosion. Further, trail building and road construction activities in the 1216, 1170, and 1315 soil types, which overlap the Darby and Hominy Peak formations, could result in the release of fine sediment into streams. As described under the Affected Environment discussion, the composition of these formations and their proximity to waterways within the project area have the potential to exacerbate erosion impacts. These areas would need to be stabilized quickly before the next rain or snowmelt season and would require additional PDC. Potential impacts associated with disturbances over these formations are further described in the **Groundwater Report** and site specific PDC have been developed to address this potential issue.

Consistency with the 1997 Forest Plan

With the implementation of geology and soils PDC discussed under the Proposed Action previously, the proposed projects under Alternative 5 are expected to comply with all relevant guidelines addressed in the *1997 Forest Plan*. As previously stated, the *1997 Forest Plan* does not contain standards for the geology and soils resource that are relevant to this analysis. Refer to the **Soils Technical Report** for additional information about PDC intended to address *1997 Forest Plan* guidelines for geology and soils.

3.14.5 Cumulative Effects

SCOPE OF THE ANALYSIS

The effects analyzed in this discussion apply to all Alternatives. The following projects are expected to cumulatively have short- and long-term effects on soil resources within the GTR SUP area and on adjacent NFS and private lands.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for soil resources extend from 1969 when GTR first opened as a ski area through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for soil resources are limited to public and private lands in the vicinity of the GTR SUP area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future projects within the cumulative effects project area, the reader is referred to **Appendix A** in the document. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment.

The GTR 2018 MDP projects could have cumulative impacts on soil resources and are analyzed in the following discussion. Past actions of development of GTR trails and terrain have increased erosion rates and sedimentation and reduced soil productivity in comparison to undisturbed areas in the project area. In addition, ski development and mountain biking, hiking, and multi-use trails within the project area have increased impermeable surfaces and soil compaction.

Changes in erosion rates, sediment yield, and compaction from temporary disturbances associated with construction activities would be short-term once restored following project completion; however, permanent structures, such as access roads, buildings, and multi-use trails would result in increased impermeable surfaces causing higher runoff and higher mass movement potential.

The Forest Service requires the implementation of PDC and BMPs to minimize impacts to soil resources and sedimentation to waterways. Impacts to soil productivity reflect changes in land use, management, and vegetation cover between pre-development and present conditions. If PDC and BMPs are properly implemented and maintained, onsite erosion and potential increases in sedimentation to waterways would be minimized. Similarly, the incremental additional effects on local slope stability would be negligible.

3.14.6 Irreversible and Irretrievable Commitments of Resources

There would be an irreversible and irretrievable loss of soil from erosion entering streams and exiting the watershed, but with the proper implementation of PDC and BMPs this loss would be minimal.

3.15 Hydrology

3.15.1 Scope of the Analysis

This analysis summarizes the *Impacts on Groundwater from the Proposed 2021 Expansion, Grand Targhee Resort, Teton County, Wyoming* (Groundwater Report) and [Hydrology Technical Report](#), *Grand Targhee Resort Master Development Plan* (Hydrology Report) which are available in the project file.³⁰⁵

The scope of this hydrology analysis focuses on surface water and groundwater flows located within the existing and proposed GTR SUP areas. The project area includes several watersheds containing various un-named ephemeral, intermittent, and perennial channels. There are also multiple aquifers below GTR that are influenced by activities at GTR. For purposes of this analysis, the study watersheds are identified based on the stream to which they are tributary.

³⁰⁵ Geo Haz Consulting Inc. 2021; Alder Environmental 2022

3.15.2 Federal, State, and Local Policy and Guidance

The *1997 Forest Plan* provides guidance for all natural resource management activities including Forest-wide and Management Prescriptions specific standards and guidelines. The *1997 Forest Plan* identifies various standards and guidelines for water resources.³⁰⁶

FOREST-WIDE WATER GOALS

- Maintain or improve water quality to meet water quality standards for the States of Idaho and Wyoming.
- Water quality would improve on stream segments on the Forest identified by the States of Idaho and Wyoming as having water quality concerns and they are removed from the Water Quality Limited list.
- Maintain or restore water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems.
- Maintain or restore stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems naturally developed.
- Maintain or restore instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route discharges.
- Maintain or restore the natural timing and variability of the water table elevation in meadows and wetlands.

FOREST-WIDE STANDARDS AND GUIDELINES

- Not more than 30 percent of any of the principal watersheds and their subwatersheds should be in a hydrologically disturbed condition at any one time.

MANAGEMENT PRESCRIPTION DIRECTION

The *1997 Forest Plan* only contains one goal for this resource within Management Prescription 4.2 – *Special Use Permit Recreation Sites*: “Improve stream channel stability ratings to good or excellent by 2007 where natural conditions allow on Teton Creek, N Leigh, S leigh, Moose Creek, Trail Creek, Fox Creek, and Kiln Creek where instability is management-caused.” Additionally, some of the project area is within the Management Prescription 2.8.3 – *Aquatic Influence Zone*. The AIZ is associated with surface waters, wetlands, and riparian areas that provide unique functions and values to hydrologic, geomorphic, and ecological processes. These areas are important areas of biodiversity and have specific standards and guidelines.

According to the Management Prescription 2.8.3 – *Aquatic Influence Zone* description in the *1997 Forest Plan*, this Management Prescription prevails over other Management Prescriptions except for the following “...Special Use Permit Recreation Sites (4.2).” The proposed project area is either within Management Prescription 4.2 – *Special Use Permit Recreation Sites* (e.g., projects within the existing GTR SUP area) or would be in Management Prescriptions that would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites* under the programmatic *1997 Forest Plan*

³⁰⁶ USDA Forest Service 1997

amendment. In other words, Management Prescription 2.8.3 – *Aquatic Influence Zone*, would persist under proposed conditions; however, it would be superseded by the direction of Management Prescription 4.2 – *Special Use Permit Recreation Sites*. Standards and guidelines identified for Management Prescription 2.8.3 – *Aquatic Influence Zone* would not be applicable, as the project area would be subject to management under Management Prescription 4.2 – *Special Use Permit Recreation Sites* under proposed conditions. Under Management Prescription 4.2 – *Special Use Permit Recreation Sites* there are no standards directly applicable to hydrologic resources within the project area. Even though there are no standards and guidelines applicable to the proposed project areas, several BMPs should be taken into consideration, along with various PDC, to mitigate impacts to hydrologic resources. Refer to the discussion below for a description of the various BMPs and PDC that would be included in the project.

CLEAN WATER ACT

The CWA was enacted in 1948 but revised in 1972. The 1972 revision highlighted specific programs and initiatives related to water quality improvement that are still being used and refined today.³⁰⁷ The 1972 revision of the CWA set various goals and requirements, including requiring municipal and industrial wastewater to be treated before being discharged into waterways, increased the federal assistance for municipal treatment plant construction, strengthened and streamlined enforcement, and expanded the federal role while maintaining states responsibility for day-to-day implementation of the Act. Section 303(d) of the CWA requires that states prepare a list of water quality-limited, or impaired, stream segments. Additionally, the January 18, 2023, Revised Definition of *Waters of the United States* has been considered and included in this analysis. This revised definition advances objectives of the CWA and ensures vital protections for the nation's water resources.

Furthermore, BMPs for project design, implementation, and monitoring are necessary to comply with the CWA. The following documents were consulted to determine appropriate BMPs.

- *1997 Forest Plan*³⁰⁸
- *Ski Area BMPs – Guidelines for Planning, Erosion Control, and Reclamation*³⁰⁹
- *National BMPs for Water Quality Management on NFS Lands*³¹⁰

Specifically, according to the *1997 Forest Plan*, Management Prescription 4.2 – *Special Use Permit Recreation Sites* prevails over 2.8.3 – *Aquatic Influence Zone*. “In cases of overlap, this prescription [AIZ] prevails over all other prescriptions except the following: Special Use Permit Recreation Sites (4.2),” page III-107. Therefore, within the SUP, AIZ BMPs should be taken into consideration; however, the area is already subject to high human activity and impacts to the AIZ within the SUP are allowed. However, outside of the SUP, in Mono Trees and South Bowl, the following proposed BMPs should be applied. Along with this, numerous PDC are also included to mitigate impacts to hydrologic resources.

BMP #1 – Aquatic Influence Zone (AIZ) Protection Measures

³⁰⁷ Copeland 2016

³⁰⁸ USDA Forest Service 1997

³⁰⁹ USDA Forest Service 2001

³¹⁰ USDA Forest Service 2012

Where Proposed Actions impact the AIZ (outside of the existing SUP), site-specific BMPs should be applied in the field in close coordination with a hydrologist or fish biologist.

BMP #2 – Road and Trail Construction

Roads should be located on stable, well-drained locations, as far from riparian areas, and with as few crossings as possible. The permanent road system should be designed to be fully functional while avoiding unnecessary road segments. Temporary roads used for construction projects should be decommissioned properly.

Similarly, increased runoff and erosion can occur due to construction and use of trails, potentially impacting nearby waterbodies. Trail placement and design is integral to reducing erosion and degradation.

BMP #3 – Ski Runs and Lifts

Grading and trail creation proposed on steep slopes can expose and compact soils, leading to increased runoff and erosion. The steep and alpine nature of ski areas can increase the sensitivity of the land and create a challenge for restoration. Despite these challenges, stabilization and revegetation of disturbed slopes are necessary to meet forest guidelines and protect water resources. Recommended BMPs include practicable avoidance of wetlands and riparian areas, limiting the amount of exposed soil, and maintaining as much natural ground cover, overland flow, and channel function as possible. Successful revegetation is also needed and may require multiple plantings of native ground cover.

BMP #4 – Ski Area Facilities

Construction of ski area facilities would rely on site-specific and construction BMPs. Guidance provided by the FS National Core BMPs – April 2012 (pages 101-102) includes:

- Locate ski area facilities on stable geology and soils to minimize risk of slope failures.
- Avoid wetlands and riparian areas to the extent practicable when locating ski area facilities outside of the existing SUP.

BMP #5 – Ski Area Snowmaking

Snowmaking can alter runoff patterns across the mountain. Withdrawals can exacerbate stream dewatering and transfer of water can alter runoff regimes affecting channel morphology, erosion and headward channel extension. Increased runoff from altered snowpacks can overwhelm current water infrastructure so infrastructure would need to be monitored to ensure it can withstand any potential changes to water movement.

As stated previously, various PDC would also be implemented to mitigate impacts to hydrologic resources. These include, but are not limited to, avoiding sensitive areas such as wetlands, riparian areas, bogs, meadows, and fens; decommissioning unnecessary road segments and implementing measures to establish natural hydrologic patterns; locating stream crossings at the narrowest point; using suitable measures to avoid or minimize scour or erosion; and monitoring revegetation to avoid increases in erosion.

3.15.3 Affected Environment

PROJECT AREA DESCRIPTION

Hydrogeology

There are multiple aquifers that underlay the western flank of the Teton Range. The deepest (oldest) being fractured-rock aquifers, partly karstified in Paleozoic limestone and dolomite formations. The shallower fractured-rock aquifer exists in the Huckleberry Ridge Tuff. The youngest and shallowest aquifer is made up of a porous-medium in unconsolidated Quaternary deposits like stream gravels, alluvial fans, and glacial deposits.

The oldest aquifer lies 0.9 to 1.6 miles east of and 440 to 920 feet below the summit of Fred's Mountain. It is known as the Death Canyon Limestone aquifer. Due to the aquifer being surrounded by two impermeable formations, groundwater has dissolved the sidewalls of the limestone creating larger passages and sinkholes, a process known as karstification. This aquifer has little effect on the hydrogeology of the GTR area, as the top of the aquifer is 1200 feet below the base area. Additionally, the top of the aquifer is overlain with Park Shale, effectively sealing it off from the higher aquifers used for water supply at GTR.

Along with the Death Canyon Limestone aquifer, the other oldest aquifers include the Bighorn Dolomite aquifer, Darby Formation aquifer, and the Madison Limestone aquifer. The Darby Formation is composed primarily of limestones, dolomites, and sandstones. The karst Bighorn Dolomite aquifer forms cliff bands on the northern wall of Teton Creek valley between Fred's Mountain and Bear's Wheat Field. The Madison-Limestone aquifer is one of the most common aquifers in Wyoming and the most substantial one at GTR. It is known for its karst dissolution features and its large spring discharges; however, the whole aquifer is not karstified. A karst formation can be seen at GTR on the cutslope at the upper terminal of the Dreamcatcher Lift.

The shallower Tertiary-Quaternary Volcanic aquifer consists of Huckleberry Ridge rhyolitic tuff. This Tuff contains cooling fractures, consolidation fractures, and shear fractures. The rock fractures easily when folded or faulted, which provides an easy avenue for water flow. This specific Tuff contains primary fractures even where it is not faulted or folded. This provides easy access for groundwater, and easy irrigation for the eastern side of Teton Basin.

The shallowest aquifer is the Quaternary unconsolidated aquifer. This aquifer consists of stream channel deposits, floodplain deposits, terrace gravels, and moraine deposits. The permeability of this aquifer is greatly reduced as the finer silt and clay matrix has filled the spaces between the large boulders found in the moraine deposits.

Please refer to **Figure 15** in the **Impacts to Groundwater Report** and the report itself for more information on location of aquifers across GTR.

Groundwater Flow

Lateral Groundwater Flow

Lateral groundwater flow in and around GTR has shifted and changed from when it was first mapped in 1964. In 2002, Rendezvous Engineering created a new water table map for the Targhee Towne area, Wyoming. The map extends from Teton Creek two miles north and from the Idaho-Wyoming border three

miles eastward. This 2002 map shows the water table sloping west, 33 percent steeper than shown on the 1964 map. This is due to many private and municipal wells being drilled in the Targhee Towne area. The new wells started to dewater the aquifer below the mouth of Teton Canyon, which has in turn lowered the water table to the west and steepened the water table contours as compared to the 1960s.

Vertical Groundwater Flow

Vertical groundwater flow is dependent on the location of the recharge and discharge zones of an aquifer. Recharge zones occur where the aquifer formation outcrops at the surface or is covered by a more permeable surface like stream gravels. The discharge zone is normally found on the downslope where the aquifer meets the surface or is overlain by a permeable cover sediment.

The recharge zone for one of the oldest aquifers, the Death Canyon Limestone aquifer, is located 0.7 to 1.5 miles east of Fred's Mountain. The recharge zone of the Bighorn Dolomite occurs in two places, a narrow outcrop east of GTR on very steep slopes and cliffs and in a 2,000-foot-long stretch of lower Papoose Creek, which drains the southern portion of the existing SUP area which is served by the Peaked Lift. A possible discharge point for the Bighorn Dolomite is Alta Spring, which lies 0.7 miles west of lower Papoose Creek. This spring provides water to the community of Alta, Wyoming and has the potential to impact the Alta Community Water System. In previous high rain events, Alta Spring has experienced high turbidity levels as water moves through the Papoose Creek watershed and over the Bighorn Dolomite. Given the large cavities, the Bighorn Dolomite does not filter water as effectively, and thus turbid water at Alta Spring can occur.

The recharge zone for the shallower and shallowest aquifers, like the Madison Limestone aquifer, consists of a huge outcrop roughly 5 square miles that overlaps most of the existing and proposed SUP areas of GTR. On the other hand, the Huckleberry Ridge Tuff aquifer receives recharge from an outcrop roughly 1 mile west of the GTR base area, which then extends another 3 miles west onto the floor of Teton Basin. Recharge to the Huckleberry Ridge Tuff aquifer can also occur where the streamflow crosses the outcrop band in Dry Creek and Mill Creek. The discharge zone for the Huckleberry Ridge Tuff aquifer is located far west outside of the project area.

Discharge zones for the Death Canyon Limestone aquifer and the Madison Limestone aquifer consist of three small springs. Two of these springs emerge at the contact between the Madison Limestone and the overlying Huckleberry Ridge Tuff. An epikarst³¹¹ aquifer has developed in the upper part of the Madison Limestone. This epikarst aquifer has formed due to groundwater in the Madison Limestone flowing west until it encounters the less permeable Huckleberry Ridge Tuff which does not have the capacity to take the full groundwater flow. Groundwater then "stacks up" on the uphill side of the contact, causing the water table to rise creating a spring. The other discharge point of the Madison Formation would be at its exposed bottom contact with the less permeable Darby Formation, which occurs at the bottoms of Dry Creek and Mill Creek.

STREAM HEALTH AND WATERSHED CONDITION

The hydrologic areas that were analyzed were the TPW and the sixth level HUC subwatersheds within the Forest Service boundary (see **Hydrology Technical Report Figure 1**). Within the TPW, two areas

³¹¹ Young, incipient karst that has developed during Quaternary time while the mountains have been simultaneously eroding. Mills and Huntoon 1989

overlap with the GTR SUP: Teton Creek (TPW 019) and Leigh Creeks (TPW 020). Within the sixth HUC, three subwatersheds exist in the GTR SUP: Dry Creek, South Leigh Creek, and Teton Creek. The hydrologic areas that were analyzed were selected to be consistent with hydrologic disturbance standards and guidelines within the *1997 Forest Plan*.³¹² Similarly, these five hydrologic areas were specifically analyzed for stream health and watershed condition.

Potential Effects to Water Quality

Various water quality standards were taken into account for this analysis. One possible water quality contaminant is sediment from erosion of disturbed areas. With the potential to clear trees and create new ski and mountain biking trails, erosion becomes more likely. Specifically, runoff that flows through the Papoose Creek watershed over erodible Hominy Creek and Darby Formations could transport sediments to Mill Creek and Dry Creek and through the Madison Limestone. Further, projects adjacent to Mill Creek and Dry Creek have a high probability of contributing sediment to the two creeks.

The other threat to water quality is nutrient loading and contamination to the nearby public water system (PWS) from the proposed wastewater treatment for on-mountain facilities. The City of Driggs PWS, along with the Alta Community Pipeline, are approximately 4.5 miles from the proposed wastewater treatment plants. As stated under the *Groundwater Flow* heading, the project area lies on Karst topography, which is composed of soluble rocks like limestone. Additionally, these areas are characterized by springs and underground caves in which the hydrogeology can be vulnerable to contamination due to runoff being transported through subsurface channels.

Potential Management Effects to Stream Health

Streams within the project area are similar to channels found in higher elevation sub-alpine environments. These channels are often steep with step-pool energy dissipation. Most of the channels within GTR's existing and proposed SUP area are in proper functioning condition (refer to **Table 3.15-1**). Specifically, there are no fish bearing streams within the project area (refer to **Section 3.13** for more information).

Table 3.15-1. Functional Rating of Linear Surface Water and Seasonal Drainages by Project Area.

Functional Rating	Linear Surface Water & Seasonal Drainages by Project Area (ft)		
	Existing SUP	South Bowl	Mono Trees
Proper Functioning Condition	40,438	626	7,825
Functional - At Risk	12,876	0	1,386
Constructed Channel	1,846	0	0
Ephemeral	1,914	5,298	859
Total	57,074	5,924	10,070

³¹² USDA Forest Service 1997

There is only one waterbody within the project area, a man-made water treatment lagoon. It is located near the base of the mountain (refer to **Table 3.15-2**).

Table 3.15-2. Non-linear Surface Water by Project Area.

Surface Water Type	Surface Waters (non-linear) by Project Area (ac)		
	Existing SUP	South Bowl	Mono Trees
Lagoon	0.89	0	0

Hydrologically Disturbed Areas

HD is measured over the scale of an entire watershed. The project area exists within two TPWs (Teton Creek and Leigh Creeks) and three HUC6 level subwatersheds (South Leigh Creek, Dry Creek, and Teton Creek). The existing SUP encompasses a smaller portion of each of these watersheds. Wherever ski area operations currently take place, HD is present. Specifically, the hydrologically disturbed condition consists of changes in natural canopy cover or a change in surface soil characteristics that may alter natural streamflow quantities and character. This includes presence of bare soil and places where active erosion takes place. Outside of the project area, HD areas can include roads, hiking and biking trails, and prescribed burn areas.

The analysis of HD by watershed includes HD that was previously approved by the Forest Service.³¹³ **Table 3.15-3** and **3.15-4** summarize the existing HD areas in the TPWs and HUC6 subwatersheds.

Table 3.15-3. Estimate of Existing HD in TPWs

Targhee Principal Watershed (TPW)	Existing HD Area (acres)	TPW Area (acres)	Existing HD (%) within TPW*
TPW 019 – Teton Creek	3,211	33,177	10%
TPW 020 – Leigh Creeks	800	29,326	3%

* Note that the existing HD has been approved by Brad Higginson, TNF Hydrologist.

Table 3.15-4. Estimate of Existing HD in HUC6 Subwatersheds

Subwatersheds	Existing HD Area (acres)	HUC Area on NFS Lands (acres)	Existing HD (%) within HUC6 Subwatersheds

³¹³ Approved and existing HD shapefiles, that were used to determine HD to TPWs were confirmed by Brad Higginson, Caribou-Targhee National Forest Hydrologist, on February 18, 2021, during a call with Alder Environmental. The shapefiles were used to establish existing conditions and existing HD of the TPWs within the project area.

170402040204 – Dry Creek	517	4,404	12%
170402040303 – South Leigh Creek	84	12,349	1%
170402040201 – Teton Creek	1,166	25,549	5%

SNOWMAKING

Current snowmaking infrastructure serves beginner terrain off of the Shoshone Lift. Specifically, snowmaking only exists on the *Big Horn* trail. GTR has proposed an additional 57 acres of snowmaking on various trails within their existing SUP (refer to **Figure 6**). Average snowmaking at GTR amounts to a snow depth of 18 inches across the existing snowmaking area per year. Snowmaking snow is unique in that, it is 50 percent water and 50 percent air, thus 18 inches of machine-made snow contains 9 inches of water³¹⁴.

Natural snowfall was determined by using the Natural Resources Conservation Services snow survey products. A snow telemetry (SNOTEL) weather station is located within the GTR SUP area. It was determined that the peak of a set of median values of snow water equivalence at GTR was 47.8 inches on April 30th. These data were obtained from a dataset of snow water equivalence reported from 1991 to 2020.³¹⁵ Therefore, it was determined that the highest snow water equivalence is expected to occur in late April.

The additional water for the increased snowmaking coverage could come from additional groundwater wells on private lands. Prior to the expansion of snowmaking, it is anticipated that additional groundwater wells would be developed. The timing of which these wells would be dependent on the pace of ongoing base area development, as approved under the 2019 First Amended Master Plan – Planned Unit Development for Planned Resort Additional wells would need to be permitted by the Wyoming State Engineer’s Office.

CLEAN WATER ACT COMPLIANCE

Currently within the existing and proposed GTR SUP area there are no federally listed impaired or threatened streams.

3.15.4 Direct and Indirect Environmental Consequences

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, new winter and multi-season recreation projects would not occur at GTR. GTR would continue to operate under its current design. And there would be no direct or indirect effects on hydrology resources, and soil erosion initiated by proposed construction activities would not be allowed on NFS lands. Transportation of sediment through groundwater due to rainfall, runoff, trail maintenance/construction, and wind would continue to occur at existing rates. Most soil erosion would

³¹⁴ There is variability within the composition of machine-made snow and percentages of air and water it contains. This composition is based on accepted ski industry standards and used as an assumption for the purpose of this analysis.

³¹⁵ USDA Natural Resources Conservation Service (NRCS) 2020

likely continue to be from existing roads and from areas with a low vegetative cover. Ongoing and expected effects from changes in temperature and precipitation, such as the timing and duration of rainfall, snowfall, and snowpack, would continue to have impacts on hydrology resources. These impacts could be direct, such as effects on aquifer and water table levels, or indirect, such as impacts on hydrology that could affect erosion.

ALTERNATIVE 2 – PROPOSED ACTION

Groundwater Impacts

Most existing actions at GTR occur on Madison Limestone, a non-erodible rock made up of silt and clay. There are no weak clay seams in the Madison Limestone to generate larger slides and slumps, even on steep slopes. As a result, the existing operations have few problems from erosion and sediment deposition. Some Proposed Actions such as new snowmaking would remain concentrated in the core of GTR, on the resistant Madison Limestone, and are not anticipated to cause any new problems.

However, there are Proposed Actions that would occur on finer grained, more erodible rock units like the Hominy Peak and Darby Formations. Tree clearing, glading, and grading within these areas could cause erosion to occur. This creates more sediment transport over these rock units and then through the karstified Madison Limestone and Bighorn Dolomite, thus increasing turbidity throughout groundwater. To prevent on-site and off-site erosion and sedimentation problems, these new areas would require a more aggressive application of BMPs than have been applied previously to the core areas on the Madison Limestone.

A similar situation could occur in Rick's Basin at the north end of the existing SUP. The same erodible formations (Hominy Peak and Darby Formation) underlie the Proposed Action in Rick's Basin. A total of seven new trails (totaling 31 acres of disturbance) in Rick's Basin would lie on steep slopes in the Hominy Peak Formation. Controlling erosion and sediment transport here would require specific BMPs not normally required on Madison Limestone.

Most critical hydrologic effects could occur in the Papoose Creek watershed at the south end of the existing SUP. This watershed, along with others that flow over more erodible Hominy Peak and Darby Formations and into the Bighorn Dolomite and Madison Limestone aquifer, contributes groundwater to Alta Spring, which serves as a community water source for the Town of Alta, Wyoming. The creek is also a tributary to Teton Creek which provides water to numerous wildlife species downstream. Ground-disturbing actions in this watershed could cause more fine, highly mobile sediment to mobilize and increase the turbidity of both Papoose Creek, Teton Creek, and Alta Spring. This aquifer has large cavities which minimizes its ability to filter groundwater, thus contributing to sediment transportation and turbidity. This is a challenge not present in portions of the project area underlain by Madison Limestone, which is more resistant to erosion.

PDC and BMPs would be required for actions that occur over the Hominy Peak and Darby Formations that are not normally required for the operations that occur over Madison Limestone. These include, but are not limited to, developing an aggressive BMP plan to protect public water systems by avoiding sensitive areas or highly erosive soils, minimizing runoff, erosion, and sediment delivery to streams; implementing more aggressive sediment slope-stabilization like contour-felled logs, contour trenches, and straw bales placed in staggered tiers on the slope; mulch treatments like dry mulches and hydromulches to prevent the movement of fine sediment through the Bighorn Dolomite; vegetative buffers would be

maintained adjacent to intermittent or perennial drainages and wetlands, to the extent possible; soil disturbing activities would be avoided during periods of rain or wet soils; and including cross drains and drain dips for mountain biking trails and roads to disperse runoff and erosion.

Impacts to Water Quality

The Proposed Action within the GTR SUP area and South Bowl and Mono Trees areas has the potential to introduce two primary water pollutants, sediment and nutrient contamination, to the Dry Creek and Mill Creek watersheds. These pollutants could have impacts on downstream water and PWS systems.

As far as sediment transport, due to increased erosion, Forest Service BMPs and PDC would be put in place. BMPs put in place during both construction and operation would mitigate impacts of erosion and thus decrease the possibility of impacts to water quality. Therefore, the likelihood of sediment becoming a threat to water quality is low.

Similarly, as stated before, due to the Proposed Action taking place over Karst topography, there is little filtration of water runoff resulting in a possibility of nutrient contamination to downstream PWS systems. However, it has been determined that due to the large distance between the possible nutrient contamination area and the downstream PWS, the nutrients would likely be taken up by the plants, air, natural bacteria, and soils along the water runoff pathway. These nutrients would then be converted to different forms of nitrates and phosphates that are not threats to water quality and are considered part of the natural nitrogen and phosphorus cycles. Therefore, the likelihood of nutrient contamination being a threat to water quality downstream of the existing and proposed GTR SUP area is low.

Impacts to Stream Health

As stated previously, most channels within the project area are in proper functioning condition. Functional – At Risk channels are typical of a ski area due to increased erosion and delivery of excessive fine sediment, which slightly alters the watershed health. The Proposed Action includes various glading, tree clearing, grading, and construction of new roads and some of these actions occur within the AIZ (refer to **Section 3.16** for more information). However, due to *At Risk* channels being typical of a ski area, potential impacts to streams can be managed and are expected to be low with the implementation of proper BMPs and PDC. BMPs and PDC contained in **Table 2.4-1** are intended to reduce impacts to aquatic resources, maintain water quality and stream channel health, and meet the regulatory goals of environmental quality agencies at the federal and state level. With the combination of various BMPs and most channels being in proper functioning condition, impacts to channel stability and increased erosion are expected to be negligible.

Hydrologically Disturbed Areas

HD within GTR is measured over five watersheds, two within the TPW and three HUC6 subwatersheds. **Table 3.15-5, and 3.15-6** below summarize the proposed HD as a result of the Proposed Action in TPW and HUC6 subwatersheds. Specifically, the Proposed Action would generate an additional 1 percent HD in both Teton and Leigh Creeks. Along with this the subwatersheds would also experience HD. As a result of the proposed projects, Dry Creek would experience an additional 3 percent HD, South Leigh Creek would experience an additional 3 percent HD, and Teton Creek would experience an additional 2 percent HD.

Table 3.15-5. Estimate of the Project Generated HD in the TPWs for Alternative 2

Targhee Principal Watershed (TPW)	Project Generated HD (acres)	TPW Area (acres)	Project Generated HD (%)
TPW 019 – Teton Creek	471	33,177	1%
TPW 020 – Leigh Creeks	179	29,326	1%

Table 3.15-6. Estimate of the Project Generated HD in the HUC6 Subwatersheds for Alternative 2

HUC6 Subwatershed	Project Generated HD (acres)	HUC6 Area (acres)	Project Generated HD (%)
170402040204 – Dry Creek	135	4,404	3%
170402040303 – South Leigh Creek	50	12,349	3%
170402040201 – Teton Creek	465	25,549	2%

Furthermore, the tables below summarize the combined (total mapped project generated, existing, and previously approved) HD in the TPW and HUC6 subwatersheds. As shown in **Table 3.15-7**, the Proposed Action has a 13 percent combined HD for Teton Creek and a 3 percent combined HD for Leigh Creeks. In relation to Teton Creek, this is the highest combined HD out of all alternatives.

There is a similar change in combined HD in HUC6 subwatersheds (refer to **Table 3.15-8**). The Proposed Action creates a 13 percent combined HD for Dry Creek, a 1 percent combined HD for South Leigh Creek, and a 10 percent combined HD for Teton Creek. Once again, in relation to Teton Creek, the Proposed Action creates the most combined HD as compared to the other alternatives.

Table 3.15-7. Estimate of the Combined HD in the TPWs for Alternative 2

Targhee Principal Watershed (TPW)	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
TPW 019 – Teton Creek	1%	10%	9%	13%
TPW 020 – Leigh Creeks	1%	3%	<1%	3%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles

Table 3.15-8. Estimate of the Combined HD in the HUC6 Subwatersheds for Alternative 2

HUC6 Subwatershed	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%) ^a
170402040204 – Dry Creek	3%	12%	1%	13%
170402040303 – South Leigh Creek	3%	1%	<1%	1%
170402040201 – Teton Creek	2%	5%	8%	10%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles.

Overall, it was determined that the combined disturbances from all existing, previously approved, and Proposed Actions within the TPWs and HUC6 subwatersheds are well below the threshold of 30 percent hydrologic disturbance identified in the *1997 Forest Plan*.³¹⁶ Therefore, impacts are expected to be minimal.

Impacts from Snowmaking

Snowmaking impacts were analyzed by comparing anticipated volumes of snowmaking across the permit area to natural snowfall experienced within GTR.

GTR has proposed 57 acres of snowmaking on lower-mountain circulation routes and high use trails (refer to **Figure 6**). As previously described, additional groundwater wells on private lands are anticipated to be necessary to provide sufficient water to the snowmaking system when considered with ongoing base area development. These wells would be permitted by the Wyoming State Engineer's Office Proposed snowmaking infrastructure would be located within the existing SUP in both the Teton Creek and Dry Creek, HUC 6 subwatersheds. Of the 1,435 acres of permitted boundary within the Teton Creek watershed, 22.6 of those acres are proposed to have snowmaking. Of the 571 acres of permitted boundary within the Dry Creek watershed, 34.4 acres are proposed to have snowmaking.

The annual median peak snow water equivalence was determined to be 47.8 inches, thus the volume of water GTR receives from natural snowfall is around 5,711 acre-feet within the Teton Creek watershed and 2,273 acre-feet in the Dry Creek watershed per year. Since GTR accumulates a snow depth of 18 inches from its snowmaking infrastructure, and snowmaking snow is 50 percent water and 50 percent air, a total of nine inches of water accumulates. Therefore, within the 22.6 acres of snowmaking on the Teton Creek watershed, an average water volume of 16.95 acre-feet would accumulate. Within the 34.4 acres of the Dry Creek watershed, an average water volume of 25.8 acre-feet would accumulate.

³¹⁶ USDA Forest Service 1997

The 22.6 acre-feet of water within the Teton Creek watershed would represent a 0.40 percent increase in volume as compared to naturally recorded precipitation volumes. Similarly, the 34.4 acre-feet of water in the Dry Creek watershed would represent a 0.60 percent increase in volume compared to naturally recorded precipitation volumes. These changes in volume would contribute to melt and runoff during the spring but are not anticipated to alter peak flows or water yields to a degree that would impact channel morphology function or cause additional erosion.

Impacts from Onsite Wells Associated with Proposed Facilities

Proposed onsite wells associated with the proposed Fred's Mountain Top restaurant, Sacajawea Restaurant and Guest Facility, and the Shoshone Guest Facility are not anticipated to adversely impact existing groundwater supply in the GTR area as the diversions are minimal. It is anticipated that diversions associated with these facilities would be limited to a combined diversion of less than 5 acre-feet per year for consumptive and sanitary uses. As these proposed facilities and wells are spread out throughout the existing SUP area it is anticipated that there would be sufficient water available. All proposed onsite wells would be subject to permitting from the Wyoming State Engineer's Office. The proposed onsite wells are common to all action alternatives and are not discussed further due to their limited anticipated impact.

Clean Water Act Compliance

The Proposed Action aligns with proposed BMPs 1, 4, and 5, but does not align with 2 and 3. Further BMPs have been created related to project design, implementation, and monitoring in order to achieve compliance with the CWA. Refer to the following headings for further discussion.

BMP #2 – Road and Trail Construction

Within Rick's Basin there is a proposed road running parallel an intermittent stream. Similarly, another road is proposed on the southern end of the existing SUP which also runs parallel to an intermittent stream and its AIZ. Within the Mono Trees area, a road is proposed to overlap with a perennial stream (Mill Creek). Additionally, one of the avalaunchers within the South Bowl area is located next to an intermittent stream and within its corresponding AIZ. The proposed road in South Bowl also crosses an ephemeral stream. This does not align with the CWA as roads and facilities are proposed to be located in sensitive areas including riparian areas, wetlands, meadows, bogs, and fens. The various BMPs, identified in the **Section 3.15.2** discussion previously, would need to be implemented to protect these sensitive areas.

BMP #3 – Ski Runs and Lifts

Throughout the existing SUP ski trails, lifts, and gladed areas are proposed. Within Rick's Basin and at the southern end of the SUP there are proposed glades, ski runs, and lifts that infringe on the AIZ of two intermittent streams (refer to Hydrology Report). The proposed bottom terminal of the Mono Trees lift and associated ski runs are also located within the AIZ. The proposed ski runs in South Bowl also cross an ephemeral stream. This does not align with the CWA, and various BMPs, that have been identified previously, and PDC within **Table 2.4-1. Project Design Criteria** would need to be implemented in order to avoid impacts to sensitive areas.

ALTERNATIVE 3 – NO SUP EXPANSION

Groundwater Impacts

Since most of the potential groundwater impacts occur within the existing SUP, Alternative 3 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Water Quality

Due to most of the potential water quality impacts occurring within GTR's existing SUP, potential impacts to water quality from Alternative 3 are similar in effect as the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Stream Health

Alternative 3 could have similar effects as described in the Proposed Action. Although effects would be similar, Alternative 3 would have a lesser effect overall as compared to the Proposed Action. This is due to Alternative 3 not including the South Bowl and Mono Trees expansion. With the implementation of specific BMPs, impacts to stream health is expected to be low.

Hydrologically Disturbed Areas

Similar to the Proposed Action, Alternative 3 would have similar effects on HD, although it would be a lesser effect overall. Since, Alternative 3 does not include the South Bowl and Mono Trees expansion, both the project generated and combined impact on HD would be less (refer to **Table 3.15-9, 3.15-10, 3.15-11, and 3.15-12**).

Table 3.15-9. Estimate of the Project Generated HD in the TPWs for Alternative 3

Targhee Principal Watershed (TPW)	Project Generated HD (acres)	TPW Area (acres)	Project Generated HD (%)
TPW 019 – Teton Creek	346	33,177	1%
TPW 020 – Leigh Creeks	179	29,326	1%

Table 3.15-10. Estimate of the Project Generated HD in the HUC6 Subwatersheds for Alternative 3

HUC6 Subwatershed	Project Generated HD (acres)	HUC6 Area (acres)	Project Generated HD (%)
170402040204 – Dry Creek	135	4,404	3%
170402040303 – South Leigh Creek	50	12,349	3%

170402040201 – Teton Creek	301	25,549	1%
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Table 3.15-11. Estimate of the Combined HD in the TPWs for Alternative 3

Targhee Principal Watershed (TPW)	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
TPW 019 – Teton Creek	1%	10%	9%	12%
TPW 020 – Leigh Creeks	1%	3%	<1%	3%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles

Table 3.15-12. Estimate of the Combined HD in the HUC6 Subwatersheds for Alternative 3

HUC6 Subwatershed	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
170402040204 – Dry Creek	3%	12%	1%	13%
170402040303 – South Leigh Creek	3%	1%	<1%	1%
170402040201 – Teton Creek	1%	5%	8%	9%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles.

Impacts from Snowmaking

As described in the Proposed Action, all of the proposed snowmaking would occur within the existing SUP. Therefore, Alternative 3 would have the same impacts from snowmaking as the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Clean Water Act Compliance

As described in the Proposed Action, impacts from development in Rick's Basin and the southern portion of the SUP would overlap intermittent streams and their corresponding AIZs (refer to **Section 3.16** for more information). Alternative 3 would not align with proposed BMPs 2 and 3 and would have the same effect as the Proposed Action. This is anticipated to be to a lesser extent, due to this Alternative not including the South Bowl and Mono trees area. Various BMPs would need to be implemented in order to comply with the CWA and to avoid sensitive areas.

ALTERNATIVE 4 – SOUTH BOWL, NO MONO TREES

Groundwater Impacts

Since most of the potential groundwater impacts would occur within the existing SUP, Alternative 4 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Water Quality

Due to most of the potential water quality impacts occurring within GTR's existing SUP, impacts to water quality from Alternative 4 would be similar in effect as the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Stream Health

Alternative 4 would have similar effects as described in the Proposed Action. Although effects are similar, Alternative 4 would have a lesser effect overall as compared to the Proposed Action. This is due to Alternative 4 not including the Mono Trees expansion. With the implementation of specific BMPs, impacts to stream health is expected to be low.

Hydrologically Disturbed Areas

Similar to the Proposed Action, Alternative 4 could have similar effects on HD, although it would be a lesser extent overall. Alternative 4 would have the same effects as Alternative 3 on HD areas (refer to Table 3.15-13, 3.15-14, 3.15-15, and 3.15-16)

Table 3.15-13. Estimate of the Project Generated HD in the TPWs for Alternative 4

Targhee Principal Watershed (TPW)	Project Generated HD (acres)	TPW Area (acres)	Project Generated HD (%)
TPW 019 – Teton Creek	346	33,177	1%
TPW 020 – Leigh Creeks	179	29,326	1%

Table 3.15-14. Estimate of the Project Generated HD in the HUC6 Subwatersheds for Alternative 4

HUC6 Subwatershed	Project Generated HD (acres)	HUC6 Area (acres)	Project Generated HD (%)
170402040204 – Dry Creek	135	4,404	3%
170402040303 – South Leigh Creek	50	12,349	3%

170402040201 – Teton Creek	340	25,549	1%
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Table 3.15-15. Estimate of the Combined HD in the TPWs for Alternative 4

Targhee Principal Watershed (TPW)	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
TPW 019 – Teton Creek	1%	10%	9%	12%
TPW 020 – Leigh Creeks	1%	3%	<1%	3%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles

Table 3.15-16. Estimate of the Combined HD in the HUC6 Subwatersheds for Alternative 4

HUC6 Subwatershed	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
170402040204 – Dry Creek	3%	12%	1%	13%
170402040303 – South Leigh Creek	3%	1%	<1%	1%
170402040201 – Teton Creek	1%	5%	8%	9%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles.

Impacts from Snowmaking

As described in the Proposed Action, all of the proposed snowmaking would occur within the existing SUP. Therefore, Alternative 4 would have the same impacts from snowmaking as the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Clean Water Act Compliance

As described in the Proposed Action, impacts from development in Rick's Basin, the southern portion of the SUP, and the location of an avalauncher within the South Bowl would overlap intermittent streams and their corresponding AIZs (refer to **Section 3.16** for more information). Alternative 4 would not align with proposed BMPs 2 and 3 and would have the same effect as the Proposed Action. This is anticipated to be to a lesser extent, due to this Alternative not including the Mono trees area. Various BMPs would need to be implemented in order to comply with the CWA and to avoid sensitive areas.

ALTERNATIVE 5 – MONO TREES, NO SOUTH BOWL

Groundwater Impacts

Since most of the potential groundwater impacts would occur within the existing SUP, Alternative 5 would have similar effects as described in the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Water Quality

Due to most of the potential water quality impacts occurring within GTR's existing SUP, potential impacts to water quality from Alternative 5 are similar in effect as those described under the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Impacts to Stream Health

Alternative 5 would have similar effects as described in the Proposed Action. Although potential effects are similar, Alternative 5 would have a lesser effect overall as compared to the Proposed Action, but more effect as compared to Alternative 4. This is due to Alternative 5 having a proposed road overlap with a perennial stream in the Mill Creek drainage. Implementation of specific BMPs would be needed to mitigate impacts to stream health. Overall, impacts to stream health are expected to be low.

Hydrologically Disturbed Areas

Similar to the Proposed Action, Alternative 5 would have similar effects on HD, although it would be a lesser extent overall. Alternative 5 would have the same effects as Alternative 3 on HD areas (refer to Table 3.15-17, 3.15-18, 3.15-19, and 3.15-20).

Table 3.15-17. Estimate of the Project Generated HD in the TPWs for Alternative 5

Targhee Principal Watershed (TPW)	Project Generated HD (acres)	TPW Area (acres)	Project Generated HD (%)
TPW 019 – Teton Creek	432	33,177	1%
TPW 020 – Leigh Creeks	179	29,326	1%

Table 3.15-18. Estimate of the Project Generated HD in the HUC6 Subwatersheds for Alternative 5

HUC6 Subwatershed	Project Generated HD (acres)	HUC6 Area (acres)	Project Generated HD (%)
170402040204 – Dry Creek	135	4,404	3%
170402040303 – South Leigh Creek	50	12,349	3%

170402040201 – Teton Creek	426	25,549	2%
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Table 3.15-19. Estimate of the Combined HD in the TPWs for Alternative 5

Targhee Principal Watershed (TPW)	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
TPW 019 – Teton Creek	1%	10%	9%	12%
TPW 020 – Leigh Creeks	1%	3%	<1%	3%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles

Table 3.15-20. Estimate of the Combined HD in the HUC6 Subwatersheds for Alternative 5

HUC6 Subwatershed	Project Generated HD (%)	Existing HD (%)	Previously Approved Projects HD (%)	Combined HD (%)^a
170402040204 – Dry Creek	3%	12%	1%	13%
170402040303 – South Leigh Creek	3%	1%	<1%	1%
170402040201 – Teton Creek	2%	5%	8%	9%

a. Combined HD accounts for overlapping layers and therefore is not a sum of the project generated, existing and approved HD, but a total of the combined shapefiles.

Impacts from Snowmaking

As described in the Proposed Action, all of the proposed snowmaking would occur within the existing SUP. Therefore, Alternative 5 would have the same impacts from snowmaking as the Proposed Action (refer to Alternative 2 – Proposed Action for more information).

Clean Water Act Compliance

As described in the Proposed Action, potential impacts from development in Rick's Basin, the southern portion of the SUP, and the proposed road within Mill Creek Drainage in the Mono Trees area would overlap intermittent streams and their corresponding AIZs (refer to **Section 3.16** for more information). Alternative 5 would have more of an impact as compared to Alternative 4, due to a proposed road being located within the Mill Creek drainage. Similar to the other action alternatives, Alternative 5 would also

not align with proposed BMPs 2 and 3. Various BMPs would need to be implemented in order to comply with the CWA and avoid sensitive areas.

3.15.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the GTR SUP area and on adjacent NFS and private lands, as well as throughout Teton County, Wyoming.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for hydrology resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for hydrology resources are limited to public and private lands in the vicinity of GTR's operational area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future project within the cumulative effects study area, the reader is referred to **Appendix A**. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment discussion.

Many of the projects that have the potential to cumulatively impact hydrology resources are construction of lifts such as the Colter Lift, construction of mountain biking and hiking trails, and development of additional ski terrain. Additionally, future projects that have yet to be implemented and are included in these documents and analyses would be expected to impact the watershed quality within the GTR SUP area. Not only future projects located within the GTR's SUP, but adjacent projects like residential construction, increased traffic, and others have cumulative effects to hydrological resources.

The expansion of GTR's SUP boundary and development of lift-served skiing in the Mono Trees and South Bowl area specifically would impact areas not previously influenced by ski area operations, impinging further on hydrological resources when considered cumulatively with other projects.

3.15.6 Irreversible and Irretrievable Commitments of Resources

The addition of ski trails, lifts, and associated infrastructure would represent irretrievable effects to hydrological resources within GTR's SUP. However, the implementation of the proposed projects are not considered irreversible commitments of these resources because operations could be discontinued, returning GTR to its natural state. No additional irreversible and/or irretrievable commitment of resources have been identified that may impact hydrological resources in association with the alternatives analyzed in this document.

3.16 Wetlands and Riparian Areas

3.16.1 Scope of the Analysis

The project area for wetlands encompasses GTR's existing SUP and both the South Bowl and Mono Trees SUP expansion areas, totaling approximately 3,146 acres. This analysis summarizes the [Wetland Technical Report](#) (Wetland Report) which can be found in the project file.³¹⁷

3.16.2 Federal, State, and Local Policy and Guidance

1997 FOREST PLAN DIRECTION

The *1997 Forest Plan* does not contain Forest-wide or Management Prescription-specific goals, standards, or guidelines specific to wetlands; however, some of the project area is within the Management Prescription 2.8.3 – *Aquatic Influence Zone*. The AIZ is associated with surface waters, wetlands, and riparian areas that provide unique functions and values to hydrologic, geomorphic, and ecological processes. These areas are important areas of biodiversity and have specific standards and guidelines.

According to the Management Prescription 2.8.3 – *Aquatic Influence Zone* description in the *1997 Forest Plan*, this Management Prescription prevails over other Management Prescriptions except for the following "...Special Use Permit Recreation Sites (4.2)." The proposed project area is either within Management Prescription 4.2 – *Special Use Permit Recreation Sites* (e.g., projects within the existing GTR SUP area) or would be in Management Prescriptions that would be converted to Management Prescription 4.2 – *Special Use Permit Recreation Sites* under the programmatic *1997 Forest Plan* amendments. The programmatic *1997 Forest Plan* amendment would convert both Management Prescription 2.8.3 – *Aquatic Influence Zone* and Management Prescription 2.1.2 – *Visual Quality Maintenance* to Management Prescription 4.2 – *Special Use Permit Recreation Sites*, standards and guidelines identified for this prescription would not be applicable, as the project area would be subject to management under Management Prescription 4.2 – *Special Use Permit Recreation Sites*. Under Management Prescription 4.2 – *Special Use Permit Recreation Sites* there are no standards and guidelines pertinent to wetlands within the project area. However, even though there are no standards and guidelines applicable to the proposed project areas, several BMPs should be taken into consideration, along with various PDC, to mitigate impacts to wetlands. Outside the existing SUP, in Mono Trees and South Bowl, the following BMPs should be applied:

BMP #1 – Aquatic Influence Zone (AIZ) Protection Measures

Where Proposed Actions impact the AIZ outside of the existing SUP, site-specific BMPs should be applied in the field in close coordination with a Forest Service hydrologist or fish biologist.

BMP #2 – Road and Trail Construction

Roads should avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, and fens, to the extent practicable outside of the existing SUP.

BMP #3 – Ski Runs and Lifts

³¹⁷ Alder Environmental 2023f

Ski runs and lifts should avoid wetlands and riparian areas wherever practicable outside of the existing SUP.

Along with the BMPs listed previously there are also numerous PDC identified in **Table 2.4-1**. Specific PDC include but are not limited to, avoiding wetlands, bogs, fens, and meadows; designing road surface draining systems to removed water from the road surface and surrounding slopes; locating stream crossings where the channel is narrow, straight, and uniform; and burn piles should be located outside of the AIZ, along with others.

CLEAN WATER ACT AND EXECUTIVE ORDERS 11990 AND 11988

Wetlands within the project area are subject to regulations under Section 401 and 404 of the CWA, Executive Order 11990, *Protection of Wetlands*, and Executive Order 11988, *Floodplain Management*. Specific Nationwide Permits (NWP) and certifications may be required for the proposed impacts to wetlands. The applicable regulatory agencies are the United States Army Corps of Engineers (USACE) and the Wyoming DEQ. Additionally, the January 18, 2023, Revised Definition of *Waters of the United States* has been considered and included in this analysis. This revised definition advances objectives of the CWA and ensures vital protections for the nation's water resources.

Executive Order 11990 requires federal agencies to avoid to the extent practicable, short- and long-term adverse impacts associated with the destruction or modification of wetlands. Additionally, Executive Order 11990 directs federal agencies to avoid construction in wetlands unless there is no reasonable alternative, further stating that where wetlands cannot be avoided, the Proposed Action must include all practicable measures to minimize harm to wetlands. As required by the CWA and Executive Order 11990, avoidance and minimization measures were considered through the planning process for the proposed projects. As described in the sections below, there would be new and improved wetland crossings necessary to accomplish the proposed projects; although most impacts would be mitigated by PDC and BMPs, any proposed impacts to wetland would require a more detailed site analysis and NWP. More specifically, Executive Order 11988 defines floodplain as “the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or great chance of flooding in any given year.” Floodplains in the project area are relatively small and associated with Mill and Dry Creeks and other intermittent streams. Finally, the USACE's policy of no net loss of wetlands requires mitigation for wetland impacts, which can include the construction of new wetlands to replace those that were lost, the purchase of credits in a wetland mitigation bank, the restoration of a degraded wetland, or a combination thereof. The type and amount of wetland mitigation for these projects would be determined during a future CWA 404 permit process.

3.16.3 Affected Environment

Mapping of wetlands and riparian areas was completed based on field surveys completed during the 2019 season. Wetland mapping was based on vegetation common to wetland areas, previous knowledge and wetland delineations within the project area, and indicators of hydrology, such as surface water or saturation, drainage patterns, and geomorphic positioning (e.g., depressional wetland areas, wetland seeps). Formal wetland delineations according to USACE manuals were not performed. When activities are implemented, site specific wetland delineations (including analyses of soil indicators) would be completed to inform site planning, permitting, and mitigation. **Table 3.16-1** provides a summary of the various wetlands that mapped within the project area.

Table 3.16-1. Wetlands within the Project Area

Wetland & Riparian Type	Acres of Wetlands and Riparian Areas in Existing SUP	Acres of Wetlands and Riparian Areas in Proposed South Bowl SUP Area	Acres of Wetlands and Riparian Areas in Proposed Mono Trees SUP Area
Emergent	7.7	0.81	1.76
Emergent & Scrub-Shrub	0.24	0	0
Emergent & Riparian	16.78	0	0.27
Scrub-Shrub	0.05	0	0.21
Scrub-Shrub & Riparian	11.98	0	0
Riparian	5.51	0.54	1.47
Total	42.26	1.35	3.71

* Note that the total is a sum of the areas, and the cumulative total does not include overlapping areas.

THE AQUATIC INFLUENCE ZONE

As defined in the *1997 Forest Plan*, AIZ is associated with surface waters, wetlands, and riparian areas that provide unique functions and values to hydrologic, geomorphic, and ecological processes. These areas are important reservoirs of biodiversity and likewise are subject to specific standards and guidelines.

The AIZ is comprised of a buffer zone around surface waters and wetlands. The streams, wetlands, and corresponding AIZs are influenced by intermittent mountain tributaries, seeps, snowmelt, and perennial streams (Dry Creek and Mill Creek). There is one man-made waterbody within the project area, the water treatment lagoon located near the base of the mountain. AIZ areas in the south part of the project area are comprised of steeper drainages and confined channels. The AIZ areas in the northern part of the project area within the existing SUP are lower in elevation and slope. These areas have more extensive wetlands, influenced by natural mountain springs and Dry Creek (refer to **Table 3.16-2**).

Table 3.16-2 AIZ Boundary Widths (from high water mark) by Water Type

Water & Wetland Type	Surface Water Names	AIZ Width for Teton Range Subsection	Area (ac)
Perennial non-fish bearing stream reaches	Mill Creek, Dry Creek	150 feet, each side	124
Reservoir (lagoon)	unnamed wastewater lagoon	150 feet	5
Wetlands (> 1ac)	wetlands	150 feet	110

Intermittent reaches	unnamed reaches	100 feet, each side	198
Wetlands (< 1ac)	wetlands	100 feet	47
Total			484
Cumulative Total			390

* Note that the total is a sum of the areas, and the cumulative total does not include overlapping areas.

Additionally, there are impacts that are previously approved by the Forest Service but have not been implemented yet and existing impacts to the AIZ that are located predominantly within the existing SUP area. Existing impacts outside of the existing SUP are trails and grading for a power line within the Mono Trees SUP expansion areas. The previously approved impacts to the AIZ outside of the existing SUP are limited to burn areas located within South Bowl and Mono Trees (refer to **Table 3.16-3** below for more information).

Table 3.16-3. Existing and Previously Approved Impacts to AIZs by Project Area and Impact Activity

Impact Type	Existing Impacts			Previously Approved Impacts		
	Existing SUP	South Bowl	Mono Trees	Existing SUP	South Bowl	Mono Trees
Burn Areas					5.90	9.72
Glades	19.06					
Grading	4.82		0.20			
Road or Trail	5.77		0.17	0.98		
Lagoon	0.91					
Mountain Bike Trails				1.27		
Ski Trails	63.31					
Total	93.87	No Impacts	0.37	2.25	5.90	9.72

QUALITATIVE WETLAND FUNCTIONS AND VALUES ASSESSMENT

To assess the ecological functions and values of the wetlands within the project area, a qualitative wetland functional assessment was completed, using the Montana Department of Transportation – *Montana Wetland Assessment Method*.³¹⁸

Wetland functions are self-sustaining properties of a wetland ecosystem that exist in the absence of society and relate to ecological significance without regard to subjective human values. For example, the amount of groundwater discharge is a wetland function. Values of wetlands are benefits that derive from either one or more functions and the physical characteristics associated with a wetland. The value of a given wetland function is based on human judgement of the worth, importance or quality attributed to those functions.³¹⁹ For example, possessing waterfowl habitat is an example of a wetland value. Further descriptions of functions and values of wetlands are available in the Wetland Report, refer to this report for more information.

Using the *Montana Wetland Assessment Method*, the wetlands within the project area were analyzed as a whole and assigned applicable functions and values ratings of low, moderate, or high (refer to **Table 3.16-4** for more information). Refer to the Wetland Report for more information.

Table 3.16-4. Montana Wetland Assessment Method Qualitative Rating of Wetland Functions and Values

Wetland Functions & Values	Qualitative Rating
General Wildlife Habitat	High
General Fish Habitat	Low
Flood Attenuation	Moderate to Low
Short- and Long-term Surface Water Storage	Moderate
Sediment/Nutrient/Toxicant Retention and Removal	High
Sediment/Shoreline Stabilization	High
Production Export/Terrestrial and Aquatic Food Chain Support	High
Groundwater Discharge	High
Uniqueness	High
Recreation/Education Potential	High

The wetlands in the project area are predominantly hydrologically influenced by mountain seepage and snowmelt-dominated ephemeral tributaries. There is a mixture of emergent, scrub-shrub, and forested

³¹⁸ Berglund and McEldowney 2008

³¹⁹ USACE 1995

wetlands. Specifically, higher alpine wetlands are present as small pockets, while those in lower elevations are larger mosaic riparian habitats.

3.16.4 Direct and Indirect Environmental Consequences

This section identifies and discusses the direct and indirect impacts of the alternatives on wetlands and riparian areas within the project area. Direct impacts are caused by the action and occur at the same time and place (36 CFR § 1508.8). Direct impacts to wetlands can take many forms. Examples of direct wetland impacts include but are not limited to filling in a wetland, driving through a wetland, or manipulating the boundaries of a wetland. Indirect impacts are caused by the action but occur later in time or are farther removed in distance and are also reasonably foreseeable (36 CFR § 1508.8). Indirect impacts can occur as a result of shading of wetland vegetation by boardwalks, forest or shrubby overstory removal, or snow compaction.

Under the Proposed Action, and other Action Alternatives, there is a potential that projects could cause direct and indirect impacts to wetlands and other waters of the USACE Nationwide Permit number 42 (NWP 42) – Recreational Facilities, authorizes the discharge of dredged or fill material into waters of the United States for the construction or expansion of recreational facilities including ski areas. The discharge may not cause the loss of greater than 0.5 acres of non-tidal water of the United States. Temporary impacts to waters of the United States are calculated separately from permanent losses of waters of the United States, and do not contribute to loss thresholds. Discharges resulting in the loss of greater than 0.5 acres require authorization under an Individual Permit. Indirect impacts are considered by the USACE district engineer when making minimal adverse environmental effects determinations on a case-by-case basis. Refer to the headings below for a description of the direct and indirect impacts on wetlands and riparian areas as a result of the proposed projects.

ALTERNATIVE 1 – NO ACTION ALTERNATIVE

Under the No Action Alternative, there would be a continuation of existing management practices. Some minor indirect impacts to wetlands are likely occurring within the existing GTR SUP area as a result of ongoing ski area operations (i.e., snow compaction, increased hydrologic budgets from snowmaking, and vegetation removal). However, under the No Action Alternative there would be no new ski terrain, no new or upgraded lifts, no additional snowmaking, and no new recreational or multi-season facilities or activities. There are no new anticipated direct effects to wetlands or other waters of the United States from the No Action Alternative. Ongoing changes in temperature and precipitation may impact the extent, distribution, and functions of the wetlands within the existing GTR SUP area. These impacts may be minor and would likely occur over an extended period of time and could be additive to indirect impacts like overstory removal and shading of wetland vegetation.

ALL ACTION ALTERNATIVES

Aquatic Influence Zone

Based on an overlay of the documented hydrologic resources and the projects included in the Action Alternatives, there are various impacts to AIZ areas and linear streams. Several larger impact areas do not follow specific BMPs to avoid sensitive areas such as riparian areas, wetlands, meadows, bogs, and fens. These sensitive areas include an unnamed drainage in Rick's Basin, an unnamed drainage in South Bowl, and an unnamed drainage in the southern portion of the existing SUP. Additionally, maintenance and access roads are currently located within valley bottoms near AIZ areas. Furthermore, proposed glading

and new ski runs overlap with the AIZ. Most of the impacts to AIZs, from the Proposed Action, occur within the existing SUP (refer to **Table 3.16-5**). These impacts are similar to the existing and previously approved impacts; however, they include updates to guest service facilities, snowmaking activities, avalanche safety measures, and new ski lifts. Overall, impacts to the AIZ is nominal in South Bowl (0.01 acre), a little more intensive in Mono Trees (3.86 acres), and the most intensive in the existing SUP area (66.78 acres).³²⁰ The Proposed Action would result in 178.96 acres of cumulative impacts to the AIZ. Overall, the No Action Alternative and Alternative 3 have the least direct impacts to the AIZ followed by Alternative 4 (refer to **Table 3.16-6**). The Proposed Action and Alternative 5 have the most direct impacts, with many being associated to ski trails and glades. Even though impacts are expected, specific PDC would be implemented to mitigate these impacts. PDC are identified in **Table 2.4-1**.

Table 3.16-5. Proposed Impacts Within the AIZ.

Impact Type	Proposed Impacts to AIZs by Project Area (ac)			Required/Potential y Required CWA Section 404 Nationwide Permits
	Existing SUP	South Bowl	Mono Trees	
All Guest Service Facilities	0.25			NWP 39 or 42
All Lifts	2.30		0.30	NWP 42 - Recreational Facilities
Avalauncher	-	0.01		NWP 42
Cat/Construction Maintenance Access Route	<0.00			NWP 42
Fat Bike Trails	1.05			NWP 42
Glades (assumes 100% in AIZ)	15.86		0.80	NWP 42
Hiking Trails	0.03			NWP 42
Multi-Use Trail/Mountain Biking Trail	3.79			NWP 42
Colter Terrain Improvements	0.28			NWP 42
Road	11.28		0.19	NWP 14 - Linear Transportation Projects
Ski Trails	21.3		2.57	NWP 42
Snowmaking Pipe	4.99			NWP 58 - Utility Line Activities for Water and Other Subsurfaces

³²⁰ Alder Environmental 2022

Summer Activities Zone	5.64			NWP 42
Total	66.78	0.01	3.86	

Table 3.16-6. Cumulative Impacts to the AIZ Under the Proposed Action

Alternative	Existing AIZ Impact (acres)	Previously Approved AIZ Impact (acres)	Proposed AIZ Impact (acres)	Cumulative AIZ Impact (acres)
Alternative 1 – No Action	94.24	17.87	0.00	111.23
Alternative 2 – Proposed Action	94.24	17.87	70.65	178.96
Alternative 3 – No SUP Expansion	94.24	17.87	66.78	158.12
Alternative 4 – South Bowl, no Mono Trees	94.24	17.87	66.79	164.01
Alternative 5 – Mono Trees, no South Bowl	94.24	17.87	70.64	173.07

Qualitative Wetland Functions and Values Assessment

Under the Action Alternatives, wetland functions and values would be impacted. Functions and values like general wildlife habitat, groundwater discharge, uniqueness, and recreation/education potential would be directly impacted as construction of project aspects would disturb wetland boundaries and extent. These direct impacts would occur in both the short-term and long-term, as construction of project aspects occur and as the project aspects become permanent and are located within the AIZ and within wetland boundaries. Indirect impacts in the form of removing vegetation/stabilizing bank material or shading of vegetative material would occur to functions and values like flood attenuation, short- and long-term surface water storage, sediment/nutrient/toxicant retention and removal, sediment/shoreline stabilization, and production export/terrestrial and aquatic food chain support. These indirect impacts would occur in both the short-term and long-term as projects are implemented. Furthermore, given the existing recreation within GTR's existing SUP, wetlands that are within the existing SUP area are already often directly or indirectly impacted by human activity. Additional impacts to wetlands, within the existing SUP area, as a result of this project would not add to existing impacts substantially. Although both direct and indirect impacts are expected to occur to functions and values of wetlands within the project area, these impacts would be mitigated with specific PDC and BMPs identified for this project (refer to **Table 2.4-1** for more information). Impacts to wetland functions and values would be the most intensive under the Proposed Action, followed by Alternative 4, and then Alternative 5 and Alternative 3.

Clean Water Act and Executive Order Compliance

Under the Proposed Action, adherence to specific PDC and BMPs for project design, implementation, and monitoring are necessary to comply to the CWA and Executive Orders 11990 and 11988. Refer to **Table 2.4-1** for more information on PDC. A list of specific BMPs would be established prior to construction of the projects in coordination with TNF resource specialists and a TNF hydrologist. If PDC and specific BMPs are followed, adherence to the CWA and Executive Orders 11990 and 11988 would be achieved.

3.16.5 Cumulative Effects

SCOPE OF THE ANALYSIS

Effects analyzed in the Cumulative Effects discussion apply to all alternatives, including the No Action Alternative. The following projects are expected to cumulatively have short- and long-term effects on overall recreational opportunities in the GTR SUP area and on adjacent NFS and private lands, as well as throughout Teton County, Wyoming.

Temporal Bounds

The temporal bounds for this cumulative effects analysis for wetland and riparian area resources extend from GTR's founding as a ski area in 1966 through the foreseeable future in which GTR can be expected to operate.

Spatial Bounds

The spatial bounds for this cumulative effects analysis for wetland and riparian area resources are limited to public and private lands in the vicinity of GTR's operational area.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE PROJECTS

For a detailed description of past, present, and reasonably foreseeable future project within the cumulative effects study area, the reader is referred to **Appendix A** in the DEIS. Past ski area and county development projects have been incorporated and analyzed in this document as part of the Affected Environment discussion. Projects that could have cumulative impacts on wetland and riparian areas are analyzed in the following discussion.

Under the No Action Alternative, cumulative effects to wetlands would continue to occur. Prior to implementation of the CWA, GTR and the recreational activities present within their existing SUP likely directly impacted wetlands. However, since the CWA implementation and over the past few decades, ski areas across the nation, including GTR have worked closely with the USACE to avoid, minimize, and mitigate direct impacts to wetlands. As stated previously, some minor indirect impacts to wetlands are likely occurring within GTR's existing SUP and are expected to continue. These indirect impacts can range anywhere from overstory removal to snow compaction. Additionally, past disturbance to wetlands has likely occurred within the GTR SUP as well as the general vicinity where proposed SUP expansion would occur. However, considering the existing laws protecting wetlands on both private and federal lands, cumulative impacts to wetlands from past, present, and reasonably foreseeable projects within the project area would be insignificant.

Under the Proposed Action and other Action Alternatives, cumulative impacts would be similar as described for the No Action Alternative; however, the magnitude would be slightly greater under the Proposed Action. With the combination of existing, previously approved, and proposed impacts to

wetlands, there is a potential to cumulatively impact 178.96 acres of wetlands through temporary disturbances. However, when combined with all past, present, and reasonably foreseeable future actions, and considering the existing laws and guidance, as well as the PDC and BMPs identified in **Table 2.4-1**, with the implementation of mitigation measures the cumulative impact to wetland would meet the intent of the *1997 Forest Plan*, CWA, and Executive Orders 11990 and 11988.

3.16.6 Irreversible and Irretrievable Commitments of Resources

There are no permanent wetland impacts associated with the Proposed Action; therefore, there would be no irreversible commitment of wetland resources. The proposed temporary impacts to wetlands associated with the installation of the proposed projects is considered to be an irretrievable commitment of wetland resources and would likely last for approximately three to five years or until the disturbed wetlands are fully restored to their pre-disturbance condition.

Chapter 4. Consultation and Coordination

4.1 Preparers

Table 4.1-1 and **Table 4.1-2** detail those who participated in initial scoping, were members of the ID Team or NA-LA staff, Consultant Team and/or provided direction and assistance during the preparation of this EIS.

Table 4.1-1. Forest Service Interdisciplinary Team

Team Member	Project Responsibility
Mel Bolling	Forest Supervisor, CTNF
Jay Pence	District Ranger, CTNF
Doug Herzog	Forest Planner, CTNF
Chris Kula	Wildlife Biologist, CTNF
Rose Lehman	Botanist, CTNF
Sarah Wheeler	Public Affairs Officer, CTNF
Ashly Kula	NEPA Coordinator, CTNF
Brad Higginson	Hydrologist, CTNF
David Marr	Soil Scientist, CTNF
Joseph McFarlane	Recreation Manager, CTNF
Deborah Flowers	Assistant Fire Management Officer, CTNF
Wes Stumbo	Branch Chief, CTNF
Avery Beyer	Targhee Zone Forester, CTNF
Steve Armstrong	Archaeologist, CTNF
Lee Mabey	Fisheries Biologist, CTNF
Cheryl Beck	Geographic Information Systems (GIS), CTNF
Rachel Franchina	IDT Lead, Region 2 MRT
Don Dressler	Program Manager, Region 2 MRT
Bryan West	Environmental Coordinator, Region 2 MRT

Team Member	Project Responsibility
Sean McGinness	Mountain Resorts Coordinator, CTNF & BTNF
Isaac Sims	Landscape Architect, Region 2 MRT
Curt Panter	National Ropeway Service Team Engineer, Regions 1 and 5
Seth Wallace	Assistant Regional Bridge Engineer, Region 4
Allison Borchers	Economist, Enterprise Program

Table 4.1-2. Consultant Team

Team Member	Project Responsibility
Kent Sharp	Principal
Scott Prior	Senior Project Manager
Catherine Winnop	Environmental Analyst
Melanie McKenzie	Environmental Analyst
Michael Clawson	Environmental Analyst
Amelya Ingram	Team Coordination and Document Processing

4.2 Governments, Agencies, and Organizations Contacted

4.2.1 Tribal Governments

- Shoshone Bannock Tribe

4.2.2 Federal Agencies

- United States Fish and Wildlife Service (USFWS)
- United States Army Corps of Engineers (USACE)
- Environmental Protection Agency (EPA)
- National Park Service

4.2.3 State Agencies

- Wyoming Department of Transportation
- State Historic Preservation Office (SHPO)
- Wyoming Department of Natural Resources
- Wyoming Pollution Control Agency

- Teton Conservation District

4.2.4 Local Government & Agencies

- Teton County, ID
- Teton County, WYCity of Alta, Wyoming

4.3 Agencies and Organizations Who Commented During Scoping

The following agencies and organizations commented during the scoping period:

Federal Government

- National Park Service
- United States Environmental Protection Agency, Region 8

State Government and Organization

- Wyoming Game and Fish Department

County/Local Government and Organizations

- Alta Advisory Committee
- City of Driggs
- City of Victor
- Friends of the Teton River
- Friends of the Wheeler Peak Wilderness
- Great Old Broads for Wilderness
- Greater Yellowstone Coalition
- Idaho Backcountry Hunters and Anglers
- Idaho Conservation League
- Jackson Hole Conservation Alliance
- Jackson Hole Wildlife Foundation
- Jackson Workforce Center
- Mountain Bike the Tetons
- Sierra Club Wyoming Chapter
- Teton Backcountry Alliance
- Teton County, Wyoming Board of County Commissioners
- Teton Range Bighorn Sheep Working Group
- Teton Valley Trails and Pathways
- Valley Advocates for Responsible Development
- Wild Sheep Foundation
- Wilderness Watch
- Winter Wildlands Alliance
- Wyoming Wilderness Association
- Wyoming Wildlife Advocates and Sierra Club Wyoming

Chapter 5. References

Table 5.1-1. In-text Citations and Full References

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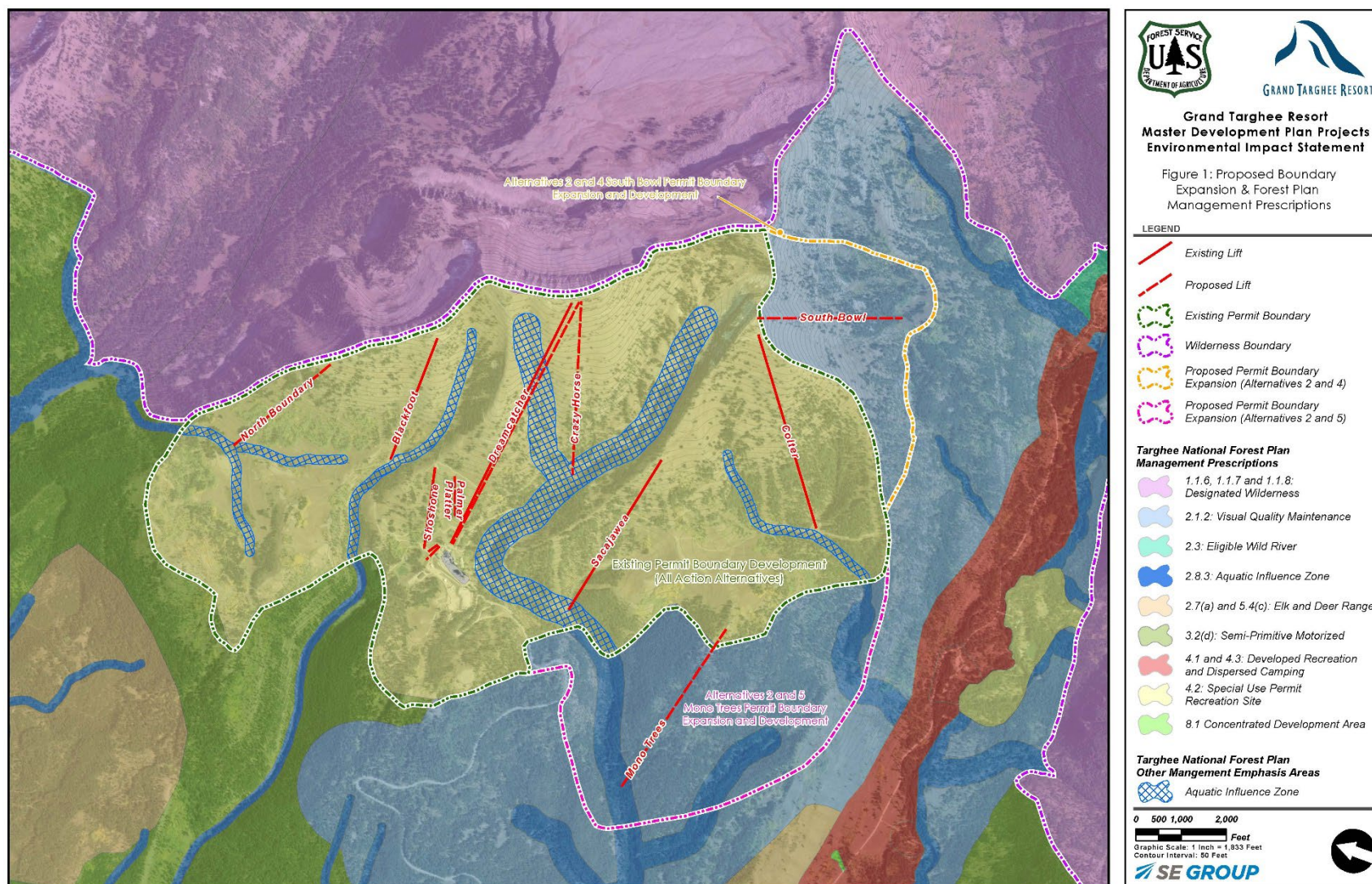
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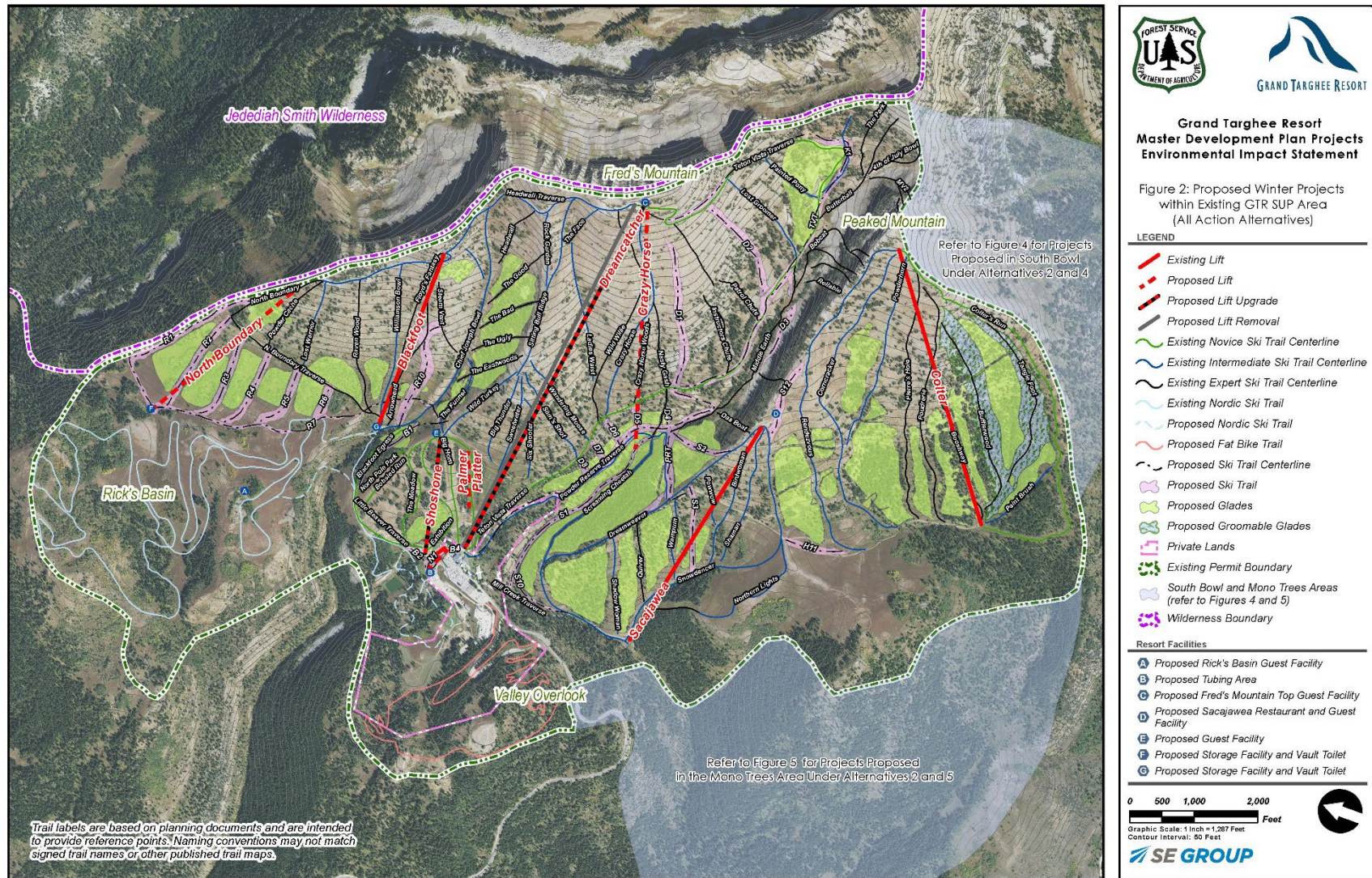
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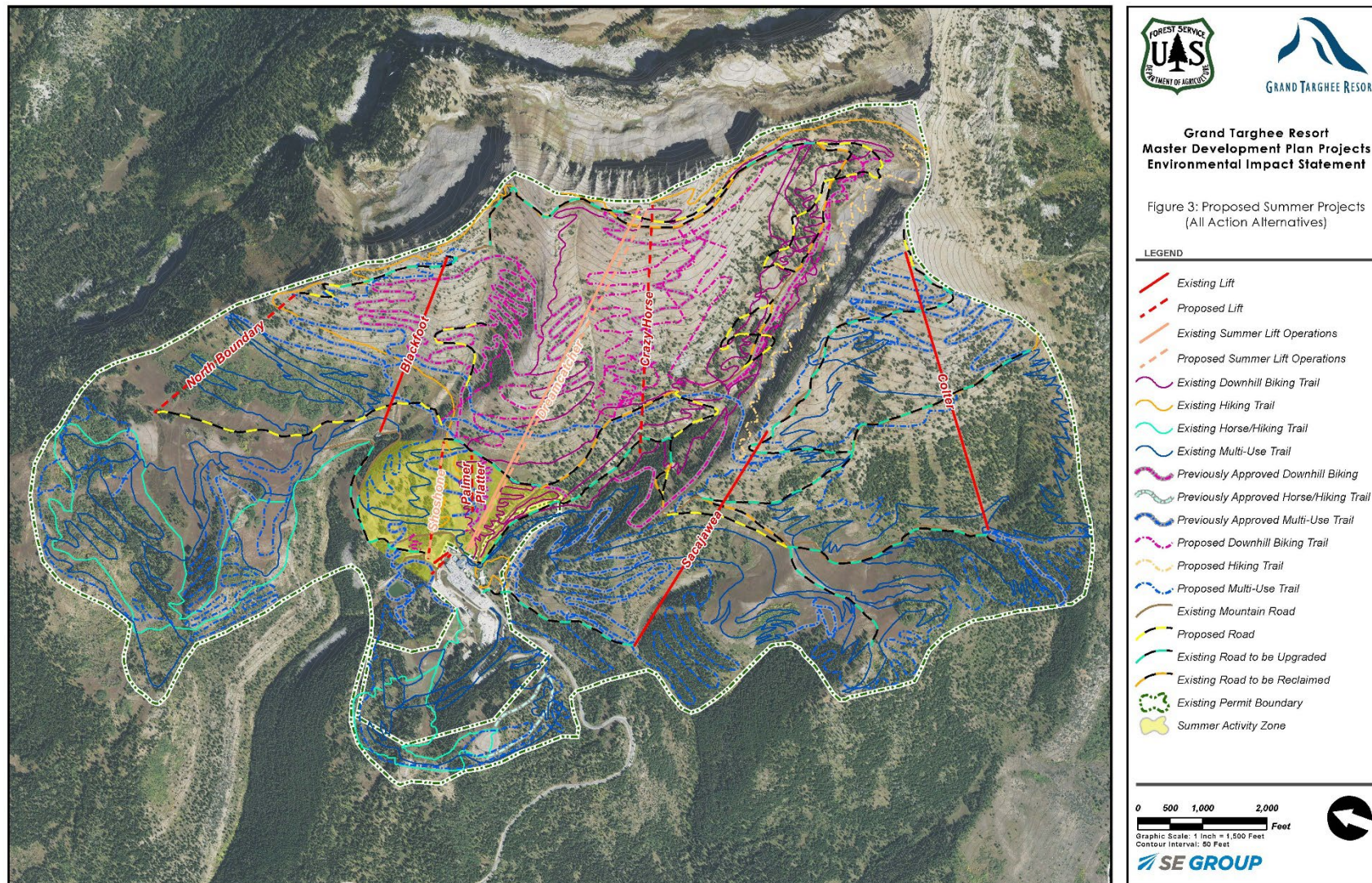
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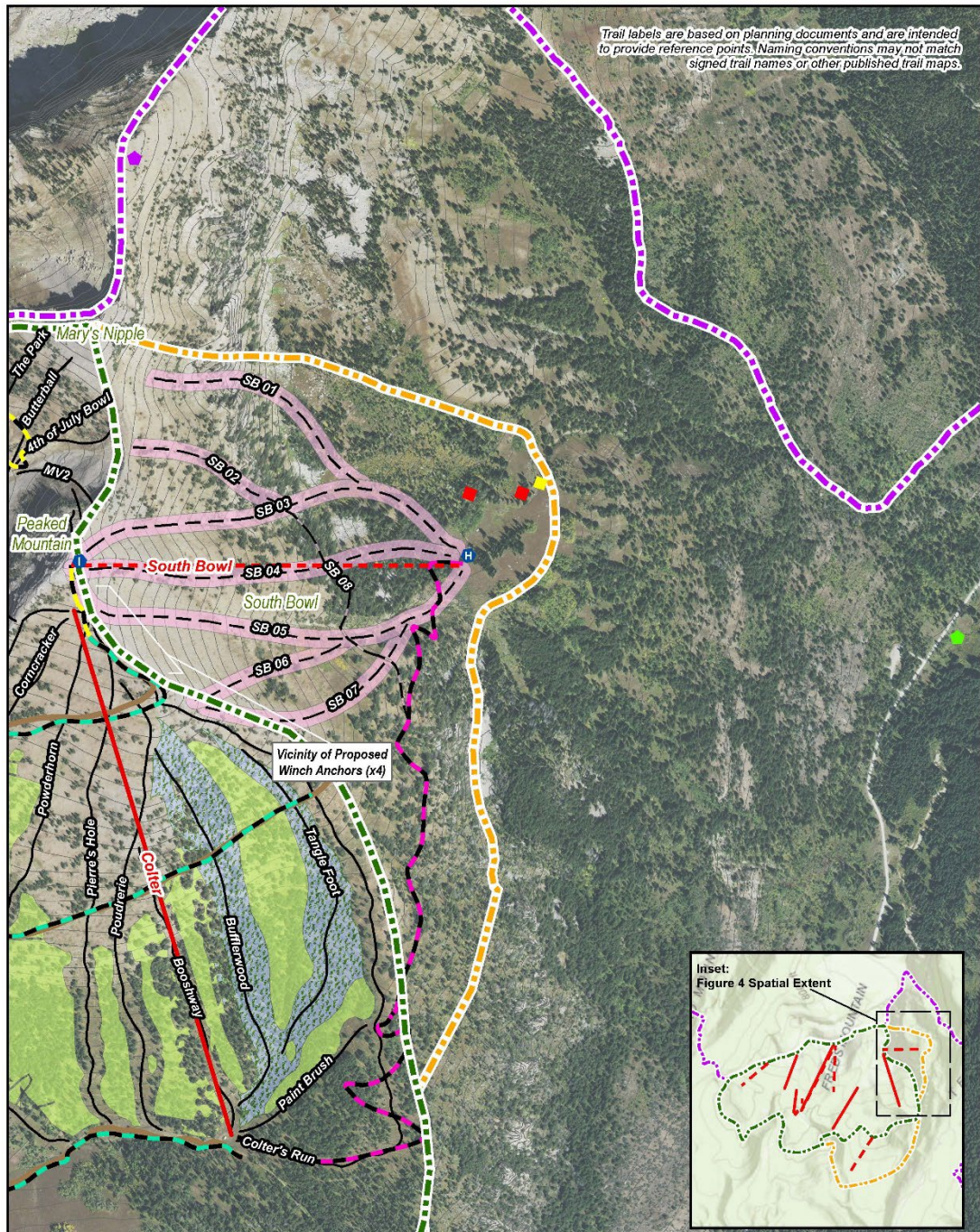
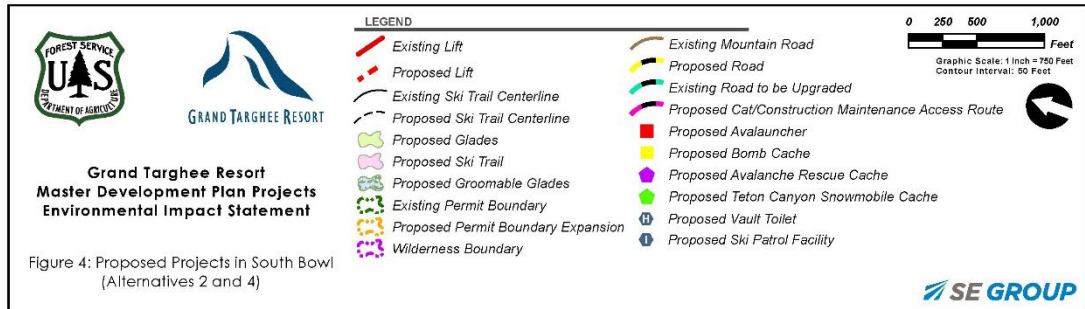
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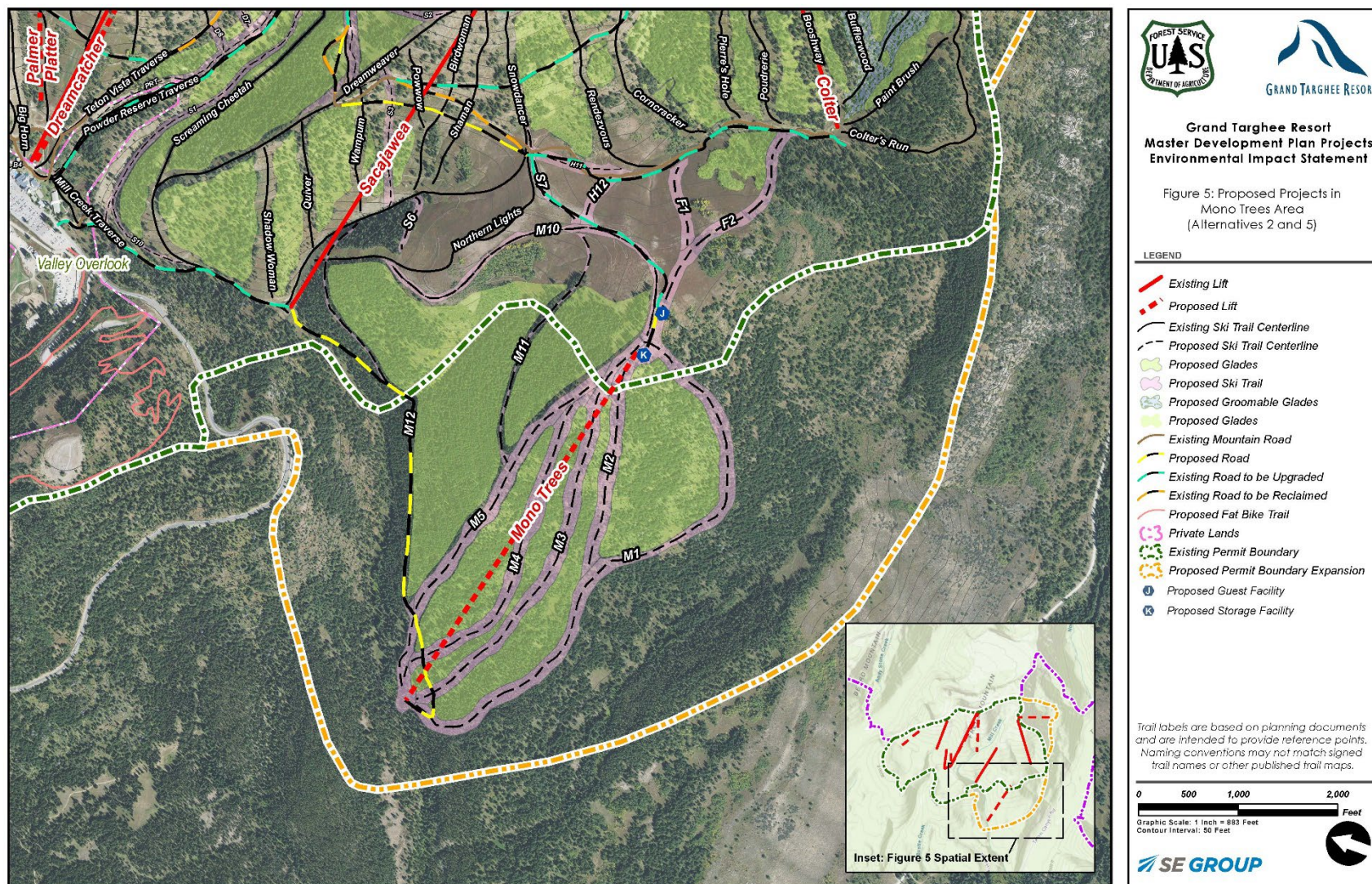
Chapter 6. Figures

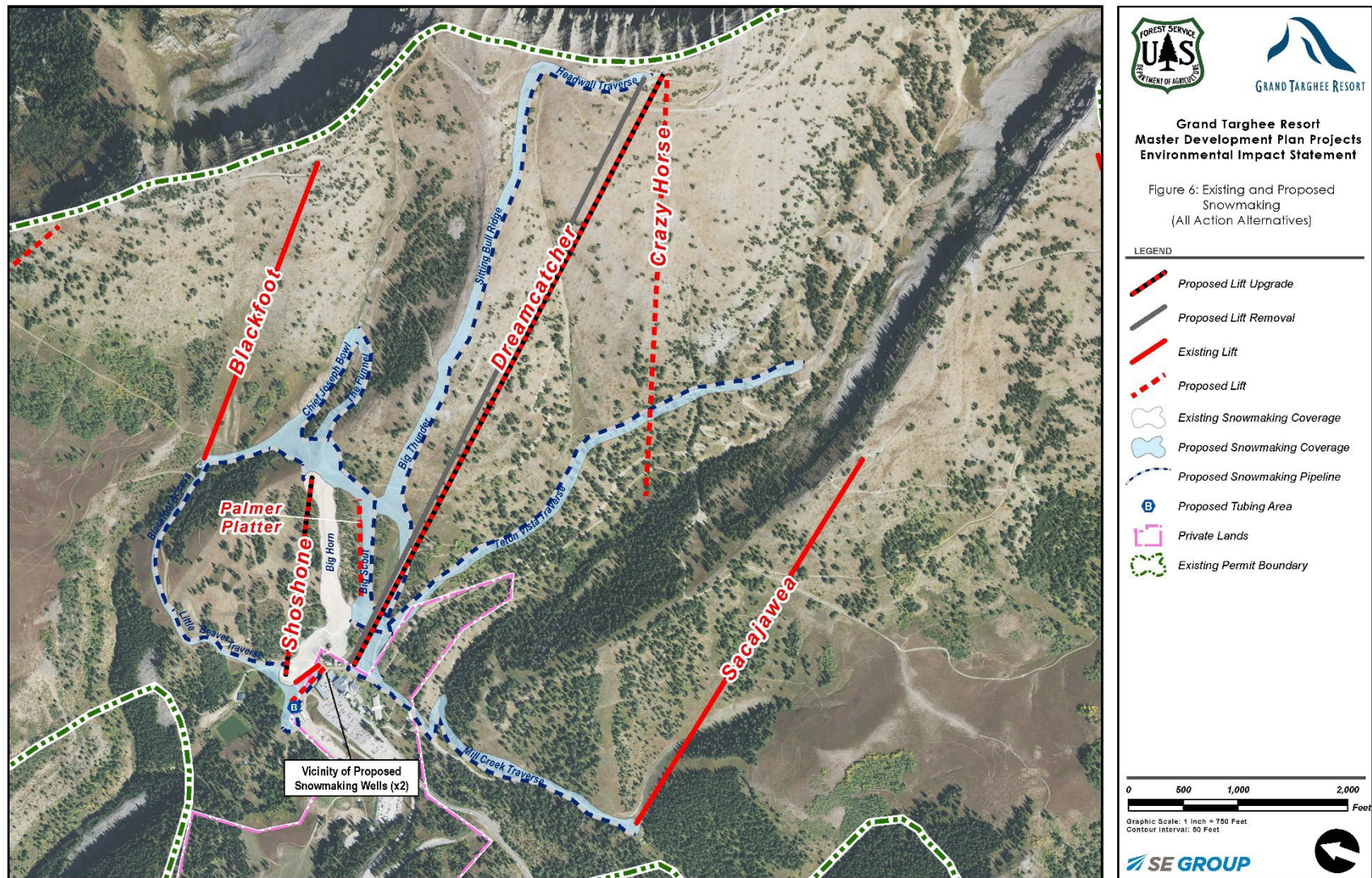


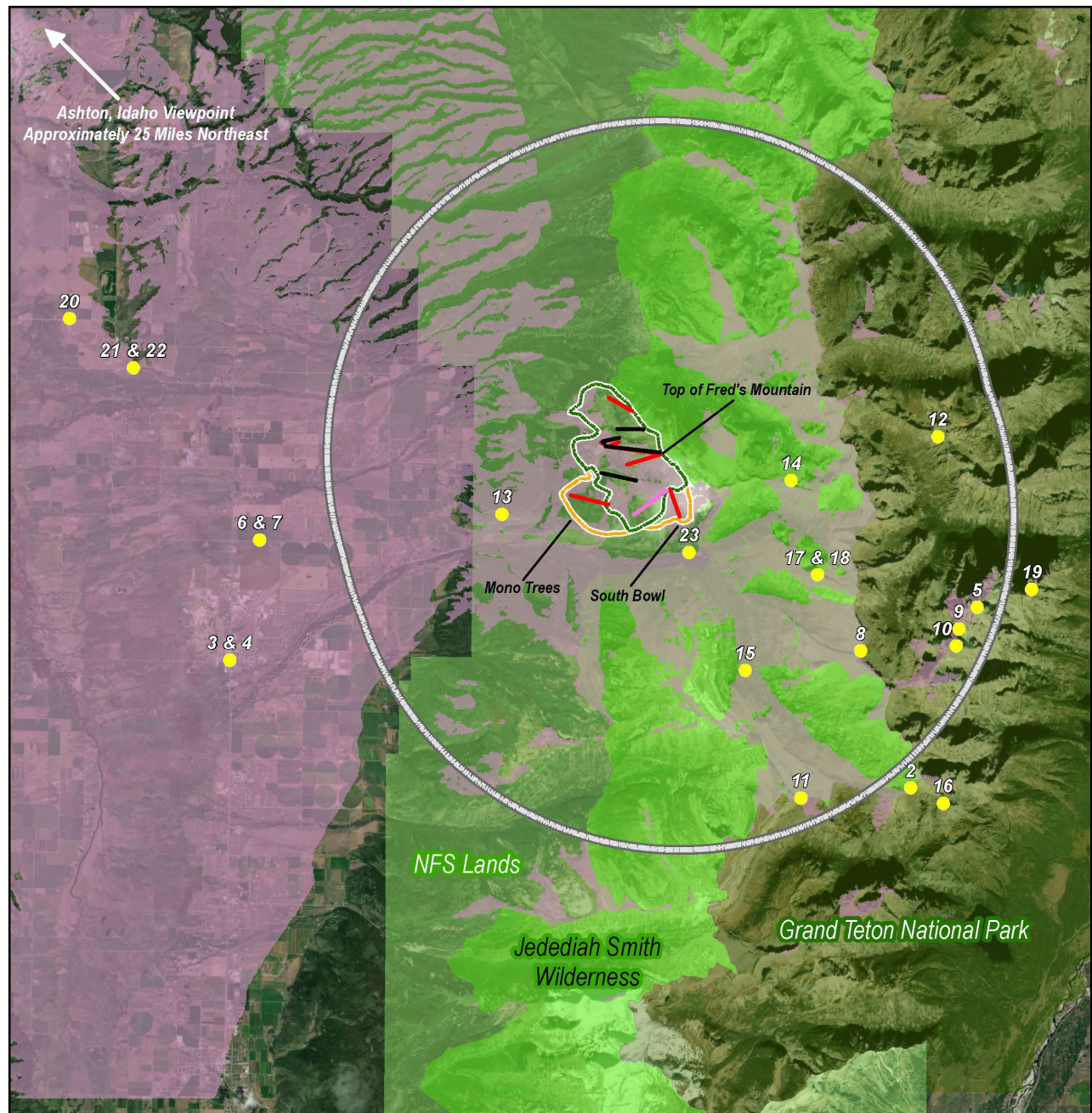












**Grand Targhee Resort
Master Development Plan Projects
Environmental Impact Statement**

Figure 7: Viewshed Associated with
South Bowl Top and Bottom Lift
Terminals

Legend

- Existing Lift
- Proposed Lifts
- Previously Approved Lift
- Existing Permit Boundary
- Proposed Permit Boundary Expansion

- Visibility
- View Locations
- Zone of Potential Visibility

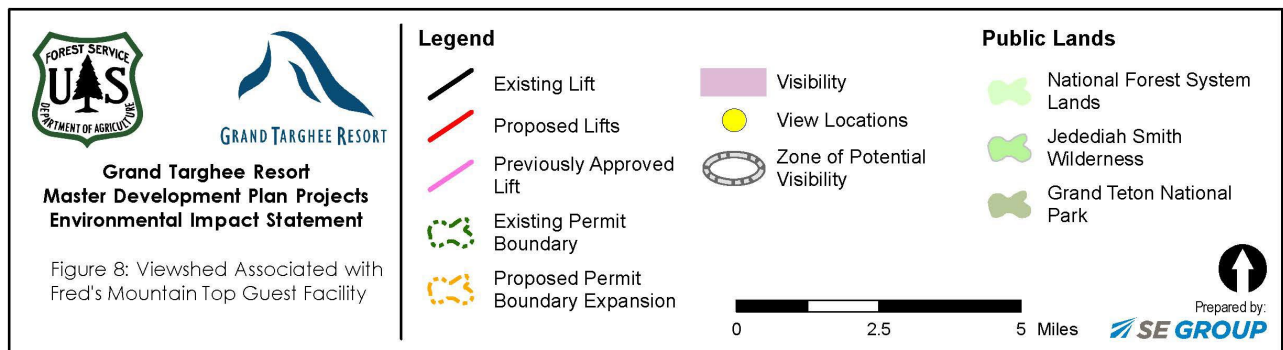
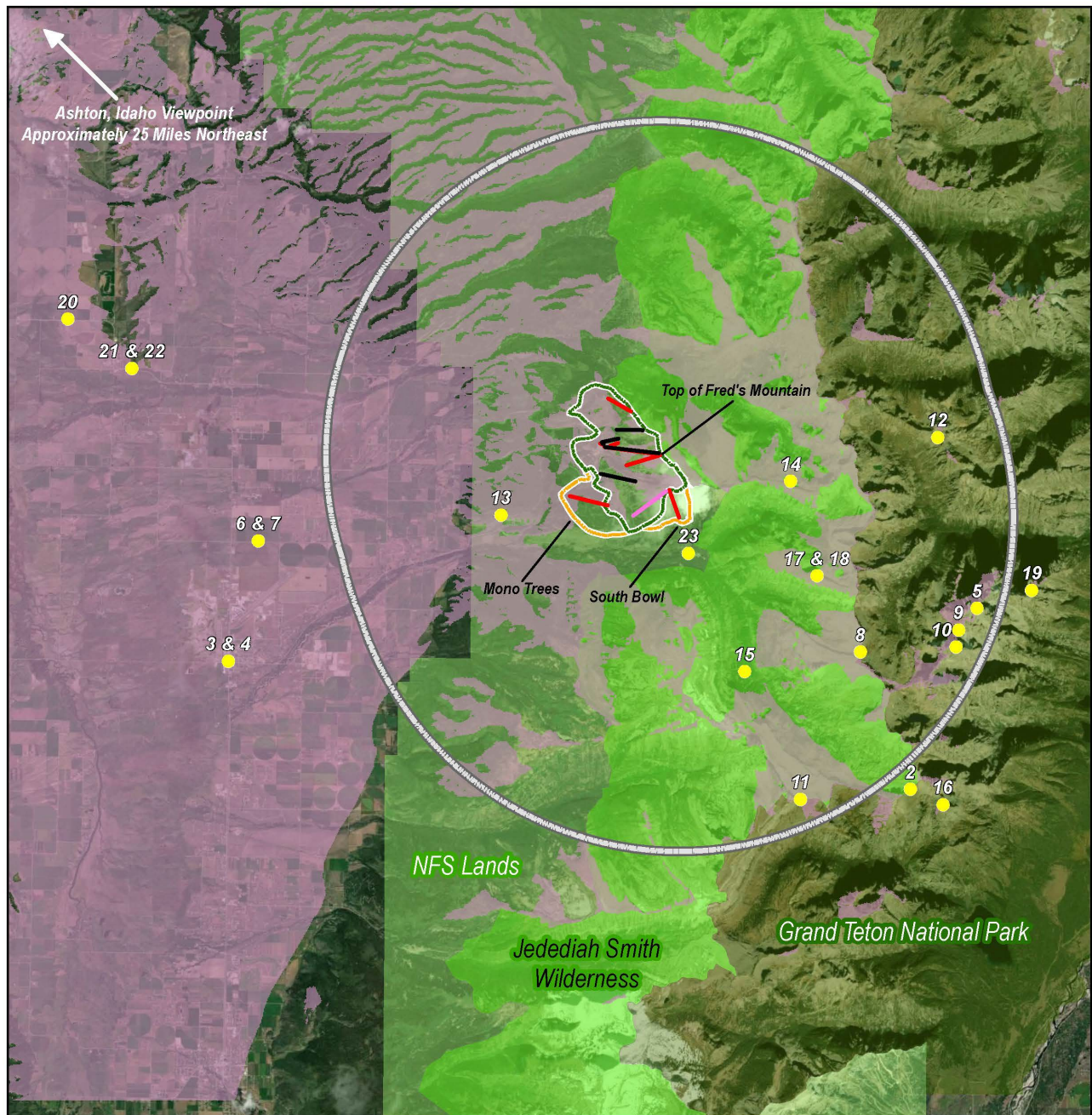
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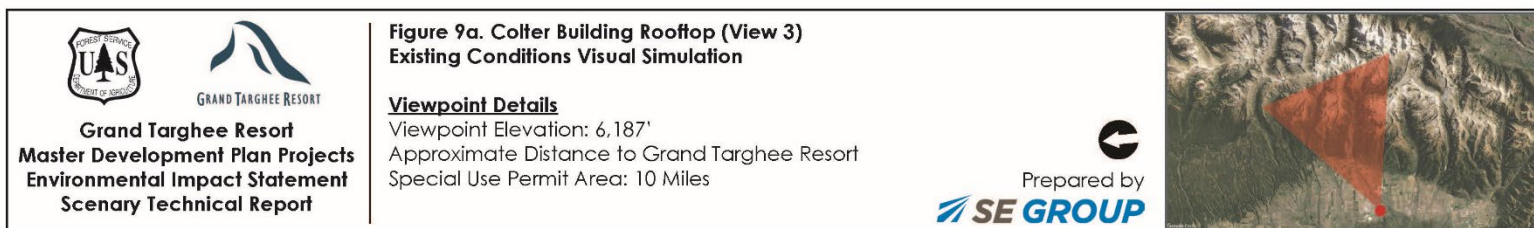
- National Forest System Lands
- Jedediah Smith Wilderness
- Grand Teton National Park

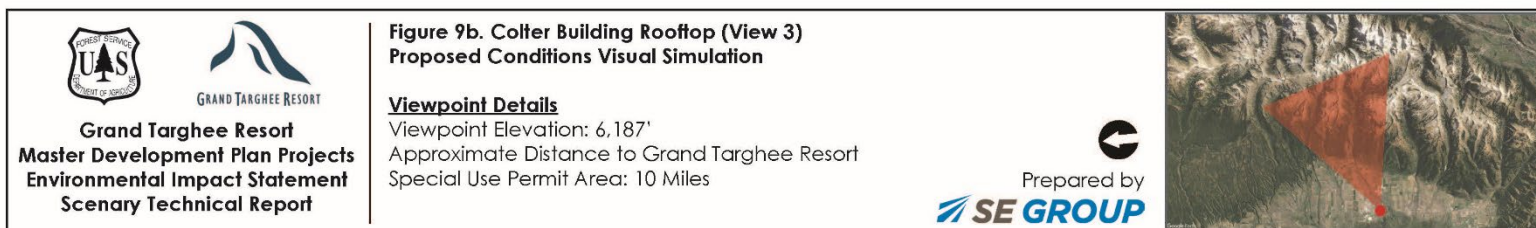
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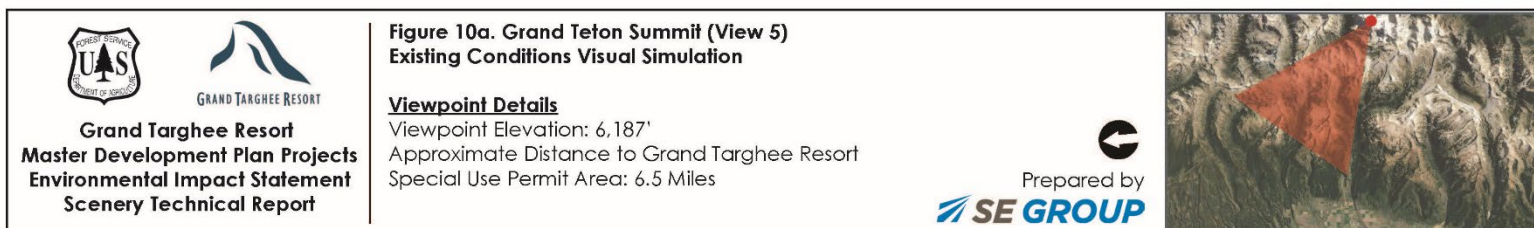
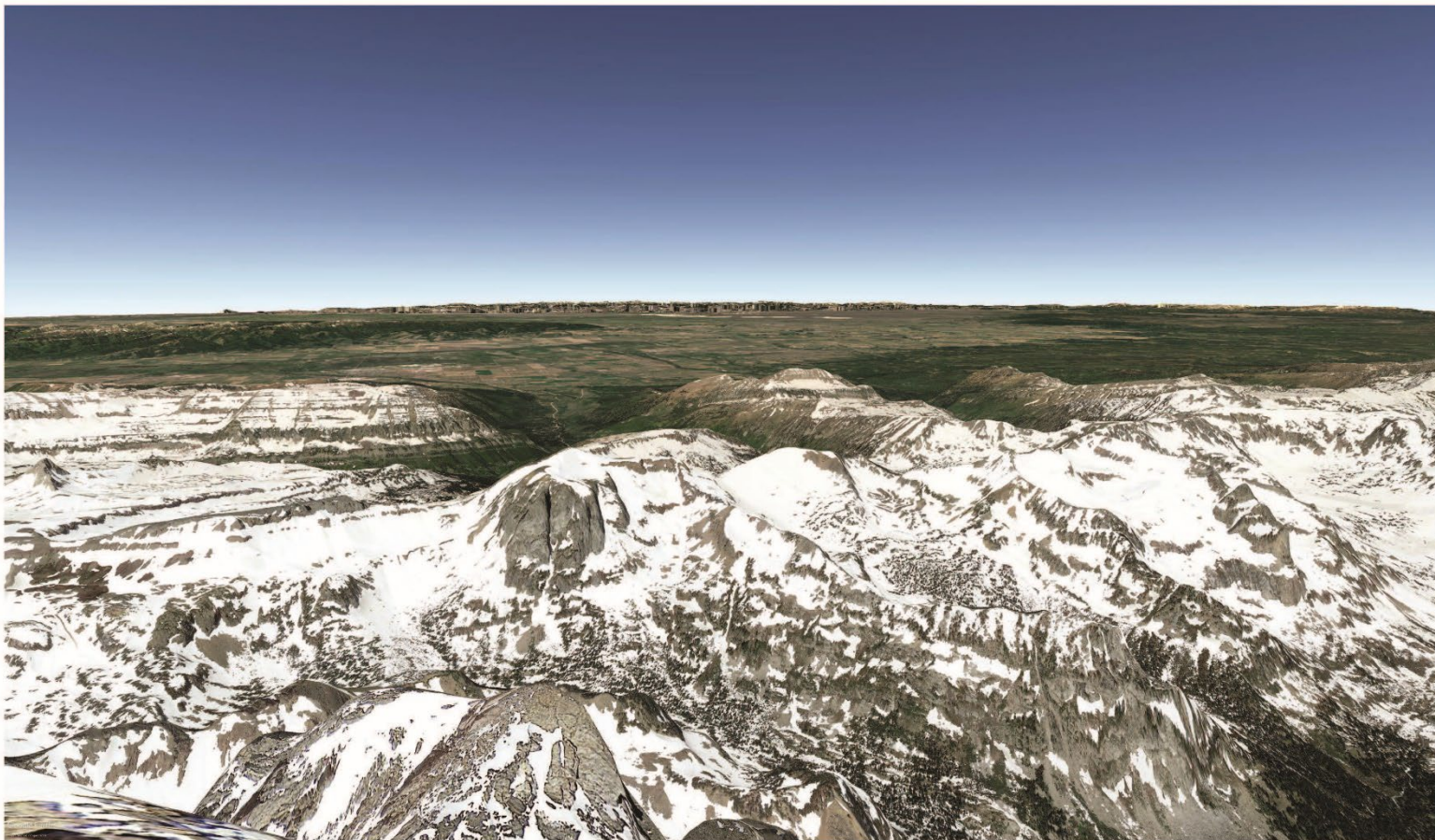


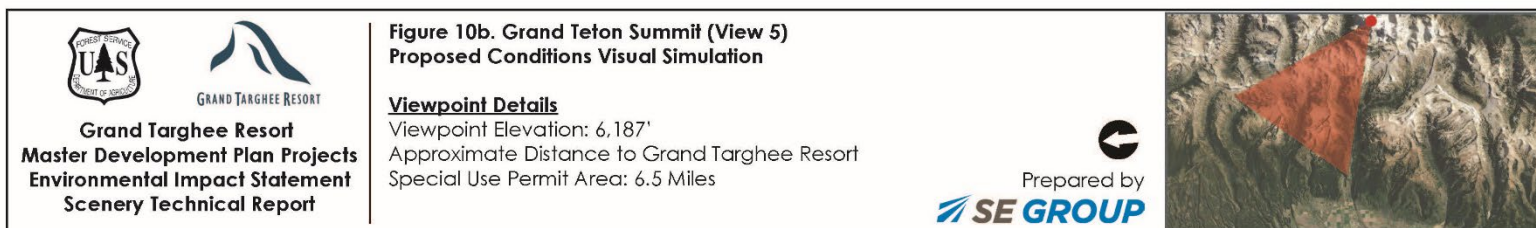
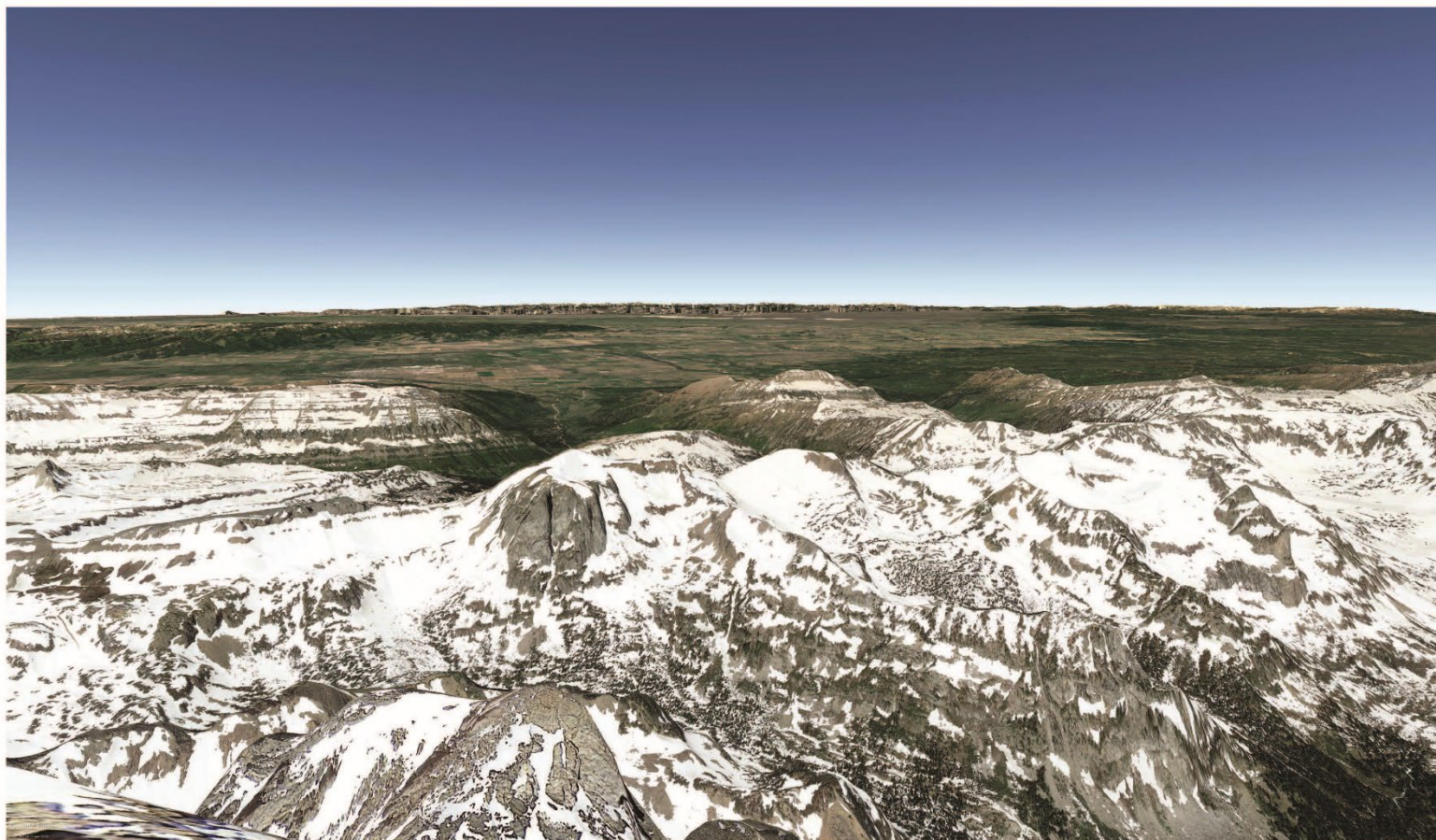
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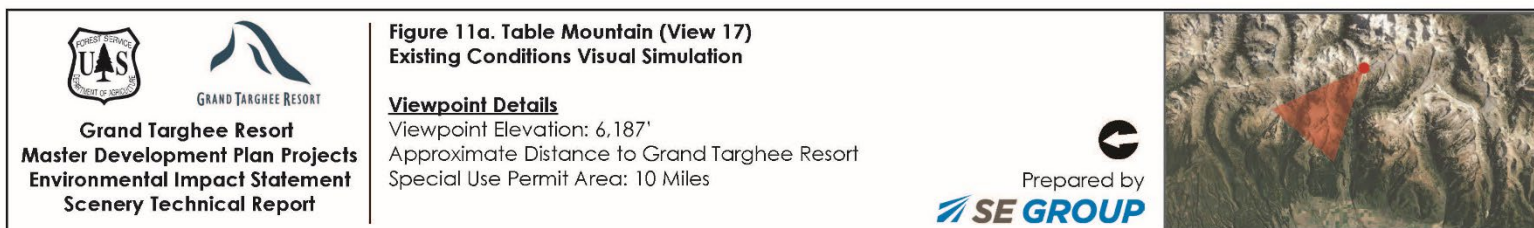


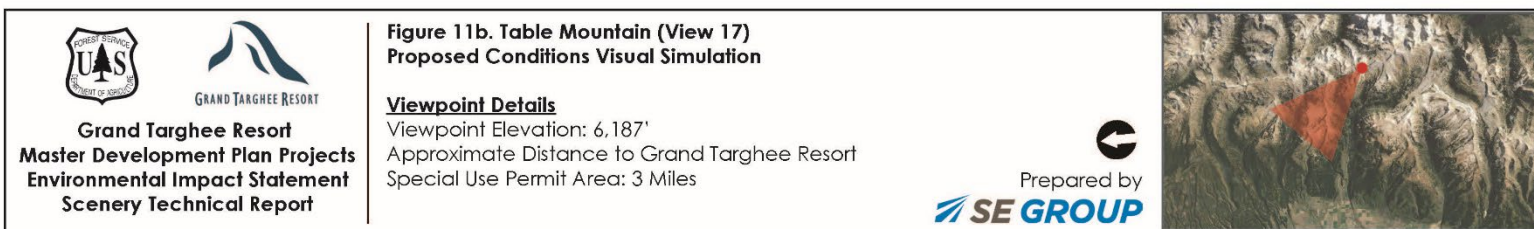
















Chapter 7. Glossary

Ability level: The relative rank of a skier or snowboarder, or the relative rank given to alpine terrain or summer trails. The six ability levels are as follows: beginner, novice, low-intermediate, intermediate, advanced-intermediate, and expert. The three ability levels for mountain biking and hiking trails are as follows: easier, more difficult, and most difficult.

Action alternatives: Any alternative that includes upgrading and/or expansion of existing recreational development within the area.

Affected environment: The physical, biological, social, and economic environment that would or may be changed by actions proposed and the relationship of people to that environment.

Airshed: A geographical area that, because of topography, meteorology, and climate, shares the same air.

Alternative: One of several conceptual development plans described and evaluated in the EIS.

Analysis area: The geographical area and/or physical, biological, and social environments that are analyzed for specific resources in the EIS.

Annual Average Daily Traffic (AADT): Annual average two-way daily traffic volume represents the total traffic on a section of roadway for the year, divided by 365. It includes both weekday and weekend traffic volumes.

Army Corps of Engineers (USACE): The federal agency charged with enforcing the Clean Water Act by regulation of dredge and fill activities in waters of the United States, including wetlands.

Average Vehicle Occupancy (AVO): Average number of occupants in a vehicle. Rate of 2.5 guests per car was used in this EIS.

Backcountry terrain: All terrain that is beyond the ski area operational boundary (defined below). Within this Draft EIS, backcountry terrain is described beyond the ski area SUP boundary (defined below). Backcountry terrain offers an undeveloped, unmaintained experience with the feeling of solitude.

Baseline condition: The existing dynamic conditions prior to development, against which potential effects are judged.

Best Management Practices (BMPs): Methods, measures, and practices specifically adopted for local conditions that minimize or avoid impacts to resources. BMPs include, but are not limited to, construction practices, structural and nonstructural controls, operations protocol, and maintenance procedures.

Biological Assessment (BA): An evaluation conducted to determine the potential effects of the action on federally listed and proposed species and designated and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action.

Biological Evaluation (BE): An evaluation conducted to determine whether a proposed action is likely to affect any species which are listed as sensitive (Forest Service), candidate (Forest Service), or other special designations.

Built Environment Image Guide (BEIG): The guide describes an approach to designing recreation and administrative facilities fits facilities within the context of their ecological, physical, and cultural settings.

Canopy: The more-or-less continuous cover of leaves, needles and/or branches collectively formed by the crowns of adjacent trees in a stand or forest.

Class I Airsheds: As designated by the Clean Air Act (see below), these are areas designated for the most stringent degree for protection from future degradation of air quality.

Class II Airsheds: As designated by the Clean Air Act (see below), these are areas where a moderate amount of development could occur.

Clean Air Act (CAA): An act that was enacted by the U.S. Congress in 1963 to control air pollution. The act established a federal program with the U.S. Public Health Service and authorized research into techniques for monitoring and limiting air pollution.

Clean Water Act (CWA): An act that was enacted by the U.S. Congress in 1977 to maintain and restore the chemical, physical, and biological integrity of the waters of the United States. This act was formerly known as the Federal Water Pollution Control Act (33 U.S.C. § 1344).

Comfortable Carrying Capacity (CCC): Comfortable Carrying Capacity is a planning tool used to determine the optimum level of utilization that facilitates a pleasant recreational experience. This metric is for planning purposes only and does not represent a regulatory cap on visitation. CCC is used to ensure that different aspects of a resort's facilities are designed to work in harmony, that capacities are equivalent across facilities, and that these capacities are sufficient to meet anticipated demand. CCC is based on factors such as vertical transport and trail capacities.

Connected Disturbed Areas (CDAs): High runoff areas like roads and other disturbed sites that have a continuous surface flow path into a stream or lake. Hydrologic connection exists where overland flow, sediment, or pollutants have a direct route to the channel network. CDAs include roads, ditches, compacted soils, bare soils, and areas of high burn severity that are directly connected to the channel system. Ground disturbing activities located within the water influence zone should be considered connected unless site-specific actions are taken to disconnect them from streams.

Corridor: A linear strip of land identified for the present or future location of transportation or utility rights-of-way within its boundaries. Also, a contiguous strip of habitat suitable to facilitate animal dispersal or migration.

Cover: Vegetation used by wildlife for protection from predators and weather conditions, or in which to reproduce.

Critical habitat: A formal designation pursuant to the Endangered Species Act that may be applied to a particular habitat that is essential to the life cycle of a given species, and if lost, would adversely affect that species. Critical habitat can have a less formal meaning when used outside of the context of the Endangered Species Act.

Cubic feet per second (cfs): Unit measure of streamflow or discharge, equivalent to 449 gallons per minute or about 2-acre feet per day.

Cultural resource: Cultural resources are the tangible and intangible aspects of cultural systems, living and dead, that are valued by a given culture or contain information about the culture. Cultural resources include, but are not limited to sites, structures, buildings, districts, and objects associated with or representative of people, cultures, and human activities and events.

Cumulative impact: The impact on the environment that results from the incremental impact of the action when added to other past, present and reasonable foreseeable future actions regardless of what agency or person undertakes such other actions. Each increment from each project may not be noticeable but cumulative impacts may be noticeable when all increments are considered together.

Day visitor: Visitors that arrive in the morning and drive back home at the end of the day (as opposed to a “destination visitor”).

Designated critical habitat: A formal designation pursuant to the Endangered Species Act which may be applied to a particular habitat that is essential to the life cycle of a given species, and if lost, would adversely affect that species. Critical habitat can have a less formal meaning when used outside the context of the Endangered Species Act.

Destination visitor: A visitor that stays overnight within the resort community (as opposed to a “day visitor”).

Developed terrain network: Consists of its named, defined, lift-served, maintained (groomed) ski trails. These trails represent the baseline of the terrain at any resort, as they are where the majority of guests ski, and are usually the only place to ski during the early season, periods of poor or undesirable snow conditions, avalanche closures, and certain weather conditions.

Direct effect: An effect which occurs as a result of an action associated with implementing the proposal or one of the alternatives, including construction, operation, and maintenance.

Dispersed recreation: Recreation that occurs outside of a developed recreation site and includes such activities as mountain biking, hiking, backpacking, and recreation activities in primitive environments.

Distance zone: One of three categories used in the visual management system to divide a view into near and far components. The three categories are (1) foreground, (2) middleground, and (3) background. See individual entries.

District Ranger: The official responsible for administering the National Forest System lands on a Ranger District.

Diversity: The distribution and abundance of different plant and animal communities and species within the area covered by a land and resource management plan.

Ecosystem: The system formed by the interaction of a group of organisms and their environment, for example, marsh, watershed, or lake.

Effects: Results expected to be achieved from implementation of the alternatives relative to physical, biological, economic, and social factors. Effects can be direct, indirect, or cumulative and may be either beneficial or detrimental.

Endangered species: An official designation for any species of plant or animal that is in danger of extinction throughout all or a significant portion of its range. An endangered species must be designated in the Federal Register by the appropriate Federal Agency Secretary.

Environmental analysis: An analysis of alternative actions and their predictable short- and long-term environmental effects, which include physical, biological, economic, social and environmental design factors and their interactions.

Environmental Impact Statement (EIS): A disclosure document required by the National Environmental Policy Act that documents the anticipated environmental effects of a proposed action that may significantly affect the quality of the human environment.

Environmental Protection Agency (EPA): The federal agency charged with lead enforcement of multiple environmental laws, including review of Environmental Impact Statements.

Ephemeral Stream: A stream that flows only in direct response to precipitation in the immediate locality (watershed or catchment basin), and whose channel is at all times above the zone of saturation.

Erosion control: Materials, structure, and techniques designed to reduce erosion. Erosion control may include rapid revegetation, avoiding steep or highly erosive sites, and installation of cross-slope drainage structures.

Erosion hazard: Soil ratings to predict the erosion hazard or potential to be eroded.

Erosion: The detachment and movement of soil from the land surface by wind, water, ice, or gravity.

Evaporation: The process by which water changes from a liquid to a gas or a vapor as atmospheric water vapor.

Forage: All browse and non-woody plants used for grazing or harvested for feeding livestock or game animals.

Forb: Any non-grass-like plant having little or no woody material on it. A palatable, broadleaved, flowering herb whose stem, above ground, does not become woody and persistent.

Foreground distance zone: The landscape area visible to an observer from the immediate area to 0.5 mile.

Forest Plan: A comprehensive management plan prepared under the National Forest Management Act of 1976 that provides standards and guidelines for management activities specific to each National Forest.

Forest Service: The agency of the United States Department of Agriculture responsible for managing National Forests and Grasslands.

Forest Supervisor: The official responsible for administering the NFS lands in a Forest Service administrative unit who reports to the Regional Forester.

Full-Time Equivalent (FTEs): Sufficient work to keep one person employed full-time for one year. In seasonal industries one FTE may be represented by several employment positions.

Glades: Trees stands that are naturally thin or have been thinned specifically in varying degrees to improve the skiing experience by increasing the spacing between individual trees.

Grading: The practice of moving or re-contouring earthen materials to achieve a specified slope in the landform.

Grooming: The preparation and smoothing of the developed trail network's snow surface, using large over-the-snow vehicles (commonly referred to as "snow cats" or "groomers"). Groomers are equipped with front-mounted blades to push snow and rear-mounted implements to flatten and/or till the snow to the desired consistency.

Groundwater: Subsurface water in the part of the ground that is wholly saturated.

Guest services facilities or guest services: Facilities or services that are supplied by a resort—both on-mountain and at the base area—to accommodate guests' needs and to enhance the quality of the recreational experience. Examples of guest services facilities include: restaurants, warming huts, general information desks, resort lost and found departments, restrooms and lounges, ski school, daycare, public lockers and ticketing facilities, patrol, first aid clinics, etc.

Guideline: A preferred course of action designed by policy to achieve a goal, respond to variable site conditions, or respond to an overall condition.

Gully: An erosion channel greater than 1 foot deep.

Habitat: The sum of environmental conditions of a specific place that is occupied by an organism, a population, or a community.

Habitat type: A classification of the vegetation resource based on dominant growth forms. The forested areas are more specifically classified by the dominant tree species.

Hydrologic function: The ability of a watershed to infiltrate precipitation and naturally regulate runoff so streams are in dynamic equilibrium with their channels and floodplains.

Impacts: See effects.

Indicator species: An animal species used to represent a group of species that utilize the same habitat. For monitoring purposes, the well-being of the indicator species is assumed to reflect the general health of the community.

Indirect effect: Secondary consequences to the environment resulting from a direct impact. An example of an indirect impact is the deposition of sediment in a wetland resulting from surface disturbance in the upland.

Interdisciplinary Team (ID Team): A group of individuals each representing specialty resource areas assembled to solve a problem or perform a task through frequent interaction so that different disciplines can combine to provide new solutions.

Intermittent stream: A stream or reach of stream channel that flows, in its natural conditions, only during certain times of the year or in several years. It is characterized by interspersed, permanent surface water areas containing aquatic flora and fauna adapted to the relatively harsh environmental conditions found in these types of environments.

Long-term: In this analysis, long-term describes the period after five years from project completion.

Lynx Analysis Unit (LAU): The area of at least the size used by an individual lynx, from about 25 to 50 square miles. It is the unit for which the effects of a project would be analyzed.

Management Area Prescription: According to the Forest Plan, specific land areas that are categorized into management areas based off the general management direction, the location of the area, how the area will look and the opportunities available in the future, and distinct standards and guidelines that apply to the particular area.

Management direction: A statement of multiple-use and other goals and objectives, the associated management prescriptions, and standards and guidelines for attaining them.

Management measures: environmental goals to protect aquatic and riparian measures outlined in the Watershed Conservation Practices Handbook.

Management practice: A specific activity, measure, course of action, or treatment.

Master Development Plan (MDP): A document that is required as a condition of the ski area term special use permit, designed to guide resort planning and development in the long- and short-term – typically across both public and private lands.

Middleground distance zone: The landscape area visible to a viewer from 0.5 mile to about 3 to 5 miles.

Mitigation: Actions taken to avoid, minimize, or compensate for adverse environmental impacts.

Mountain Roads: On-mountain primary and secondary roads that provide summertime access to mountain buildings and lift terminal locations.

Multi-season recreation: Additional recreation uses of ski areas operating on NFS lands that provide other seasonal or year-round natural resource-based recreational activities and associated facilities, which extend beyond traditional snow-sports and winter operations.

National Ambient Air Quality Standards (NAAQS): Established under the Clean Air Act of 1963, there are primary standards, designed to protect public health, and secondary standards, designed to protect public welfare from known or anticipated air pollutants.

National Environmental Policy Act (NEPA): A law enacted by Congress in 1969 that requires federal agencies to analyze the environmental effects of all major federal activities that may have a significant impact on the quality of the human environment.

National Forest System (NFS) lands: National Forests, National Grasslands, and other related lands for which the Forest Service is assigned administrative responsibility.

National Historic Preservation Act (NHPA): An act that was enacted by the U.S. Congress in 1966 to protect historic sites and artifacts (16 U.S.C. 470). Section 106 of the Act requires consultation with members and representatives of Indian tribes.

National Register of Historic Places: A listing maintained by the National Park Service of areas that have been designated as historically significant. The register includes places of local and state significance, as well as those of value to the nation in general.

Natural Resource Conservation Service (NRCS): An agency of the U.S. Department of Agriculture that works to improve, protect, and conserve natural resources on private lands. Formerly known as the Soil Conservation Service (SCS).

No Action Alternative: The management direction, activities, outputs, and effects that are likely to exist in the future if the current trends and management would continue unchanged. Under NEPA, it means following the current approved Forest Plan management direction and guidance.

Objective: A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

Overstory: The more-or-less continuous cover of leaves, needles and/or branches collectively formed by the crowns of adjacent trees in a stand or forest.

Partners in Flight (PIF) Species Prioritization: The PIF Conservation Plan identifies species that have conservation priority in each of its planning units. Species are ranked based on vulnerability from factors such as breeding distribution, relative abundance, threats to breeding, and population trend.

Peak Day Visitation: Days during which skier visitation exceeds the CCC by as much as 25 percent.

Perennial Stream: A stream or reach of a channel that flows continuously or nearly so throughout the year and whose upper surface is generally lower than the top of the zone of saturation in the areas adjacent to the stream.

Pod: A lift and all of the terrain that is serviced by that lift.

Project area: The area encompassed by the development proposal including base area and the permit area.

Project Design Criteria (PDC): Specific measures designed to minimize or avoid impacts anticipated to occur as a result of implementation of the action alternatives. PDC are incorporated within the proposal of specified action alternatives.

Record of Decision (ROD): A document prepared within 30 days after the final EIS is issued which states the agency's decision and why one alternative was favored over another, what factors entered into the agency's decision, and whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why not.

Revegetation: The re-establishment and development of self-sustaining plant cover. On disturbed sites, this normally requires human assistance such as seedbed preparation, reseeding, and mulching.

Rill: An erosion channel less than 1 foot deep.

Riparian habitat or area: Land situated along the bank of a stream or other body of water and directly influenced by the presence of water (e.g., streamsides, lakeshores, etc.).

Scenery management: The art and science of arranging, planning and designing landscape attributes relative to the appearance of places and expanses in outdoor settings.

Scenery Management System (SMS): A systematic approach for determining the relative value and importance of scenery in a national forest first codified in 1995. Unlike the Visual Management System, the SMS recognizes the positive scenic values associated with some human modified features and settings. The analysis can go beyond NFS land into adjacent communities.

Scenic integrity: State of naturalness or, conversely, the state of disturbance created by human activities or alteration. Integrity is stated in degrees of deviation for the existing landscape character in a national forest.

Scoping process: A process that determines the issues, concerns, and opportunities that should be considered in analyzing the impacts of a proposal by receiving input from the public and affected agencies. The depths of analysis for these issues identified are determined during scoping.

Sediment: Solid material, both organic and mineral, that has been transported from its site of origin by air, water, or ice.

Sensitive species: Species which have appeared in the Federal Register as proposed additions to the endangered or threatened species list; those which are on an official State list or are recognized by the Regional Forester to need special management in order to prevent them from becoming endangered or threatened.

Short-term: In this analysis, short-term describes the period from construction up to five years after project completion.

Significant impact: A somewhat subjective judgment based on the context and intensity of the impact. Generally, a significant impact is one that exceeds a standard, guideline, law, or regulation.

Skier: At ski areas, one may see people using alpine, snowboard, telemark, cross-country, and other specialized ski equipment, such as that used by disabled or other skiers. Accordingly, the terms “ski,

skier, and skiing” in this document encompass all lift-served sliding sports typically associated with a winter sports resort.

Skier circulation: How guests navigate throughout a ski area; specifically, how a guest would migrate from one side of the ski area to the other and potentially back again.

Skier visit: One skier utilizing the ski area for any length of time; a skier visit is typically recorded as a ticket scan. Regardless of how many times a single ticket is scanned, it counts as one skier visit.

Snowmaking coverage: The acreage of the mountain that has the infrastructure nearby for snowmaking operations.

Soil: A dynamic natural body on the surface of the earth in which plants grow, composed of mineral and organic materials and living forms.

Soil productivity: The capacity of a soil for producing plant biomass under a specific system of management. It is expressed in terms of volume or weight/unit area/year.

Special Use Permit (SUP): A legal document, similar to a lease, issued by the Forest Service. These permits are issued to private individuals or corporations to conduct commercial operations on National Forest System lands. They specify the terms and conditions under which the permitted activity may be conducted.

Stand: A community of trees or other vegetation, which is sufficiently uniform in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities and to thus, form a management entity.

Standard: a course of action which must be followed; adherence is mandatory.

SUP area: That area of NFS lands encompassed within the permit boundary held by Lutsen Mountains and designated for recreational use (e.g., downhill skiing and Nordic skiing). Excludes private land.

SUP boundary: The extent of the special use permit area, within which Lutsen Mountains is permitted to provide operational facilities and guest services.

Threatened species: Any species which is likely to become an endangered species within the foreseeable future and which has been designated in the Federal Register as a threatened species.

Trail density: The number of skiers per acre on any trail at one time.

U.S. Fish and Wildlife Service (USFWS): The agency of the Department of the Interior responsible for managing wildlife, including non-ocean going species protected by the Endangered Species Act.

Understory: Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory.

Undeveloped terrain: Areas within the SUP that do not have infrastructure, maintenance, or grooming. This terrain type is primarily used by more experienced skiers.

Vehicle trips: The number of times vehicles use a segment of road.

Vertical transport: The vertical rise of a chairlift, usually measured in feet.

Visual resource: The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors.

Watershed: The entire area that contributes water to a drainage system or stream.

Wilderness: Under the 1964 Wilderness Act, wilderness is undeveloped federal land retaining its primeval character and influence without permanent improvements of human habitation. It is protected and managed so to preserve its natural conditions.

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Appendix A. Cumulative Effects Projects

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Grand Targhee Resort (GTR) Projects					
GTR 2018 Master Development Plan (MDP)	Within the GTR SUP and on adjacent private lands within the ski area operational boundary	In 2019, the United States Forest Service (Forest Service) accepted GTR's 2018 MDP. Projects in the MDP have the goal of improving GTR's recreational experience and addressing shortcomings in its offerings so that GTR can remain viable in the competitive destination skier/rider market. A majority of projects from the 2018 MDP are included in the action alternatives of this EIS. Projects not included in this EIS that are considered reasonably foreseeable future projects include: construction of new lifts, realignments of existing lifts, construction of additional guest services facilities, additional snowmaking and construction of facilities supporting ski area operations. Projects in the 2018 MDP that are not part of the action alternatives are subject to amendments in response to changes in GTR's market, the recreation industry, and technological innovations and will require site-specific National Environmental Policy Act of 1969 (NEPA) analysis prior to implementation (if located on NFS land).	Accepted 2019	Areas within the approximately 2,300-acre existing SUP included in the MDP as well as on adjacent Forest Service land	All resources

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
2021 Peaked Lift Supplemental Information Report (SIR)	Within the GTR SUP boundary	<p>Following the approval of the Peaked lift development projects in a 1994 ROD, 2004 DN/FONSI, and further documentation in a 2017 SIR, the Forest Service authorized GTR to proceed with implementation following review of a 2021 SIR for the Peaked lift documenting and reviewing changes to the project that may have occurred from the time of the previous approval. Specifically, the changed conditions from the 2017 SIR are:</p> <ul style="list-style-type: none"> • The configuration of the Peaked lift as a six-person chair rather than a quad chair; • The routing of power in an overland route rather than being buried in roads; • Burial of the lift communication line rather than handing the line along lift towers; and • Retention of ski patrol cabin at the top of Sacajawea lift. 	Approved	<5 acres	All resources
GTR 2019 First Amended Master Plan – Planned Unit Development for Planned Resort (PUD-PR)	On private lands adjacent the SUP boundary	<p>In 2004, GTR submitted an application to Teton County for a Planned Unit Development District for Planned Resort (PUD-PR). This plan was amended in 2006 and approved in 2008, then amended again in 2017 and approved in 2018 by the Teton County Board of County Commissioners. The 2008 Plan included 450 units and 150,000 square feet for commercial and resort services on GTR's 120-acre area of private land at the base of the resort. The updated plan includes the same number of units, however, it was amended to better reflect GTR's operating conditions and to include an environmental mitigation plan addressing the environmental mitigation conditions included in the approval of the 2008 plan. Relevant projects within this plan include a Transportation Demand Management Program, affordable and employee housing standards, open space and trails guidance, and plans for capital improvements and public facilities.</p>	Approved 2018	Approximately 120-acre area on private land	Air Quality Climate Change Hydrology Noise Recreation Socioeconomics Scenery Traffic and Parking Wildlife

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Teton Basin Ranger District Projects					
Packsaddle Lake Recreation Improvement Project Environmental Assessment (EA) (https://www.fs.usda.gov/project/?project=59531)	Approximately 19 miles	The Decision Notice and Finding of No Significant Impact (DN-FONSI) from 2021 approved of the reclamation of two roads, the construction of one new trail and one new road, and relocation of the Packsaddle Lake parking area to improve the recreation experience and decrease impacts to natural resources around Packsaddle Lake.	Approved 2021	2.6 miles of road improvements; <1 acre	Recreation
South Valley Hazardous Fuels Reduction Project EA (www.fs.usda.gov/project/?project=57758)	Approximately 18 miles	The 2021 DN-FONSI approved of various fuel treatment methods in the southern end of Teton Valley to improve wildfire management in the area. Proposed treatments include commercial timber sale, commercial thin, thin from below, Coppice and Coppice with Reserves, Shelterwood and Shelterwood with Reserves, ladder fuel treatments, and prescribed fire with hand/aerial ignition.	Approved 2021	Approximately 3,800 acres	Air Quality Wildlife and Fish Vegetation
Kirkham Hollow Aspen Retention Project Categorical Exclusion (CE) (https://www.fs.usda.gov/project/?project=55817)	Approximately 25 miles	The Forest Service approved the proposed action to remove conifer trees in aspen patches with significant conifer encroachment. Some removed conifer trees would be made available for Christmas tree sales to fund the rest of the project. The project would contribute to long-term retention of health aspen populations, which would benefit migratory birds and their habitats.	Approved 2019	40-70 acres	Vegetation Wildlife and Fish
Nelson Spring–Pinnacle Road Trail Extension Project EA (https://www.fs.usda.gov/project/?project=46592)	Approximately 8 miles	A 2016 DN-FONSI approved a quarter-mile OHV connector trail from the Nelson Springs OHV trail (#051) to a connecting point along FS road 912. The western portion of the Nelson Springs OHV trail will be a designated motorized winter route. The proposed action is anticipated to reduce user-created OHV routes and improve wildlife habitat by establishing a summer and winter trail designation. It will also improve motorized recreation in the area.	Approved 2016	<1 mile	Recreation Wildlife and Fish

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Red Creek Prescribed Fire CE (https://www.fs.usda.gov/project/?project=23545)	Approximately 20 miles	The Decision Memo (DM) for the Red Creek Prescribed Fire project approved controlled burns in 35-55% of the project area to create a diversity of age classes within the current vegetation and reduce hazardous fuels. The burning would occur to Douglas fir, grass, mountain brush, spruce-fir, and aspen populations.	Approved 2008	6,900 acres	Air Quality Climate Change Vegetation
South Valley Recreation Project EA (https://www.fs.usda.gov/project/?project=49317)	Approximately 17 miles	The 2017 DN-FONSI approved of recreation projects in the South Valley area south of Victor, ID. Projects include: a new trailhead with a vault restroom facility, approximately 20 miles of new trails and highway crossings, a parking lot, road improvements, decommissioning of user created routes, and construction of a bridge across Trail Creek in Idaho.	Approved 2017	20 miles of new trails and ancillary facilities	Recreation
Teton Canyon Hazardous Fuels Reduction Project EA (https://www.fs.usda.gov/project/?project=44176)	0-5 miles, bordering the southern boundary of the GTR SUP area	The 2018 DM approved of three hazardous fuels reduction methods: mechanical treatments, prescribed burning, and slashing treatments following by prescribed burning.	Approved 2018	Approximately 1,900 acres	Air Quality Climate Change Scenery Vegetation Wildlife and Fish
Teton Canyon Trailhead, Campground, and Dispersed Recreation Improvement Project EA (https://www.fs.usda.gov/project/?project=52979&exp=overview)	Approximately 2 miles	The DN-FONSI approved recreation improvement projects in Teton Canyon. Projects include: construction of new or improved facilities at the Mill Creek and North and South Teton trailheads, improvements to dispersed campsites, construction of a new and more sustainable access route, installation of erosion control devices, designation of summer and winter trails, and decommissioning of user created routes.	Approved 2018	Approximately 2.5-mile section of Teton Canyon Road	Recreation
Teton Canyon Yurt CE	Approximately 2 miles	Approved construction of a 20' yurt to be operated by an existing outfitter and guide.	Approved 2013		

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Caribou-Targhee National Forest Projects					
1997 Revised Forest Plan, Targhee National Forest	Forest-wide	The Forest Service has approved a Forest Plan for the Targhee portion of the Caribou-Targhee National Forest (CTNF). The Forest Plan establishes management standards and desired future conditions for the Targhee National Forest. The Forest Plan also describes goals and guidelines for specific management prescriptions, such as for Management Prescription 4.2 – Special Use Authorization Recreation Sites, which apply to the GTR SUP area.	Approved 1997 Implementation: Ongoing	1.8 million acres	All resources
Caribou-Targhee National Forest Plan Monitoring Transition (https://www.fs.usda.gov/project/?project=49181)	Forest-wide	The Forest Service approved a modification to monitoring elements found in the Caribou Forest Plan, Targhee Forest Plan, and the Curlew Resource Management Plan to conform with the 2012 Forest Service Planning Rule. Monitoring items for elements listed in the 2012 rule were added to each plan that did not have them. None of the existing monitoring items in these plans were deleted.	Approved 2016	2.9 million acres in the Caribou-Targhee National Forest and Curlew National Grassland (CTCNG)	All resources
Greater Sage-grouse Proposed Land Management Plan Amendments (LMPAs) and EIS for the Intermountain and Rocky Mountain Regions (https://www.fs.usda.gov/detail/r4/home/?cid=stelprd3843381)	Forest-wide	Two 2019 RODs for Idaho and Wyoming National Forest System lands approved of LMPAs for forests containing Greater Sage-grouse habitat management areas, which includes the CTCNG. Amendments to the Targhee and Caribou Forest Plans are included in Table 2-6 in Chapter 2 of the FEIS. ³²¹	Approved 2019	5.4 million acres of habitat management areas	Wildlife and Fish

³²¹ FEIS can be found at this link: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd598215.pdf

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Caribou Prescribed Fire Restoration Project Environmental Assessment (EA) (https://www.fs.usda.gov/project/?project=59025)	Approximately 40-130 miles	The EA proposes to increase the pace and scale of prescribed burning across portions of the Montpelier, Soda Springs, and Westside Ranger Districts in the CTNF. Prescribed burn methods include underburning, broadcast burning, jackpot burning, and pile burning in identified treatment areas.	Ongoing	266,000 acres	Air Quality Climate Change Vegetation Wildlife and Fish
Caribou-Targhee National Forest and Curlew National Grassland Integrated Weed Management Analysis Environmental Impact Statement (EIS) (https://www.fs.usda.gov/project/?project=57108)	Forest-wide	The 2021 Record of Decision (ROD) approved six methods for invasive species and noxious weed management in the Caribou-Targhee National Forest and Curlew National Grassland (CTCNG). The methods are biological control, herbicide control by ground-based application, herbicide control by aerial application, herbicide control by aquatic application, manual and mechanical methods, and rehabilitation and restoration projects. Notably, the project identifies invasive locations adjacent to GTR in the Teton Basin Ranger district.	Approved 2021	2.9 million acres in the CTCNG	Vegetation
Targhee National Forest Lynx Analysis Units EIS (https://www.fs.usda.gov/project/?project=40275)	Forest-wide	In 2018, the ROD for this project approved the proposed action to use the Targhee National Forest 2014 Lynx Analysis Unit (LAU) boundaries for all future projects to disclose project-level effects to lynx, its habitat, and the habitat of the snowshoe hare. As a result of this project, the CTNF will no longer need to delineate LAUs on a project-by-project basis.	Approved 2018	1.1 million acres	Wildlife
Big Hole Mountains Subsection Summer Travel Management Plan (TMP) EA (https://www.fs.usda.gov/detail/ctnf/landmanagement/planning/?cid=stelprdb5238326)	25-50 miles	The DN-FONSI for the Big Hole Mountains TMP approved a plan for a trails designed for all-terrain vehicles (ATVs), motorcycles, mountain bikes, and non-motorized uses. The DN also approved of allowing ATVs on select trails previously not recommended for ATVs and closing the entire subsection to off-trail use.	Approved 2008	357,779 acres	Recreation

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Regional Projects					
Jackson / Teton County Comprehensive Plan	0-60 miles	The Jackson / Teton County Comprehensive Plan includes the following components: Town and County collaboration, wildlife management and scenery requirements, sustainability programs, development standards and zoning requirements, concentration of town resources into a central Complete Neighborhood, provision of affordable and workforce housing opportunities, transportation planning, and overall development of a strong local economy. Recommendations for GTR are to develop according to the master plan and create a pedestrian-oriented and year-round resort community with job opportunities for locals. The plan also includes development of community amenities in Alta, including completing the park in town.	Adopted 2012	County-wide	Recreation Socioeconomics
Teton County, Idaho Comprehensive Plan	5-20 miles	The Teton County, Idaho Comprehensive Plan identifies a variety of desired future conditions. Specifically, the plan describes economic and tourism goals, promotion and development of agricultural and rural industries, economically and environmentally sustainable development standards, improvements to communications infrastructure, transportation plans for public transit, commuters, pedestrians, and visitors, provisional partnerships for natural resource management and recreation opportunities, and expansion of community events and facilities through better funding mechanisms and partnerships.	Plan dated 2012 Implementation: Ongoing ³²²	County-wide	Recreation Socioeconomics Traffic and Parking

³²² For up-to-date information on the Plan's implementation, refer to the most recent Comprehensive Plan Annual Report here:
<https://www.tetoncountyidaho.gov/codePolicy.php?type=3>

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Teton County Transportation Plan Update 2020	5-20 miles	The Teton County Transportation Plan includes recommendations for transportation maintenance, capital improvements, pavement management, unpaved roadway maintenance, traffic control devices, bridges, and access management in Teton County, Idaho. Notably, the Plan proposes road connections, road treatments, sign upgrades, and intersection improvements.	Plan dated 2020	County-wide	Traffic and Parking
Jackson/Teton Integrated Transportation Plan (ITP) (https://jacksontetonplan.com/DocumentCenter/View/1711/Jackson-Teton-Integrated-Transportation-Plan-Technical-Update-Adopted-December-2020)	0-60 miles	The Jackson/Teton ITP includes suggestions for improving commuter services, improving winter and summer transit service, improving facilities along routes, creating a vehicle maintenance facility, and incorporating key elements of the 2020-2025 START Routing Plan (described below). The Plan also places a high priority on walking and biking infrastructure. The Plan focuses primarily on transit between Jackson and Teton Village, however, also includes a plan to increase commuter routes and implement commuter transportation demand strategies in Teton County.	Plan dated 2020	County-wide	Traffic and Parking
START Bus 2020-2025 Route Plan (https://www.jacksonwy.gov/DocumentCenter/View/3932/START-2020-2025-Routing-Plan---Final-Report)	10-50 Miles	The START Bus Route Plan includes a series of route recommendations, new connectivity areas, micro transit services in East Jackson, and more direct Town Shuttles. This Plan and an associated Plan Scenario is also addressed in the Jackson/Teton ITP.	Plan dated 2020	Approximately 400,000 acres	Traffic and Parking Recreation Socioeconomics
Uniquely Driggs Comprehensive Plan (https://library.municode.com/id/driggs/munidocs/munidocs?nodeId=42d508e810005)	9 miles	The Uniquely Driggs Comprehensive Plan identifies a detailed vision for the future of Driggs as well as a land use and implementation and monitoring plan. Specific to this EIS, the Plan identifies areas along Ski Hill Road for new residential development, which may impact traffic or housing opportunities.	Adopted 2020	Approximately 2900 acres	Socioeconomics Traffic and Parking

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
City of Victor Comprehensive Plan (https://www.victorcityidaho.com/Departments/comprehensive%20plan/210224_ReEnvisionVictor_ComprehensivePlan_Adopted_Document_LowRes.pdf)	15 miles	The City of Victor Comprehensive Plan presents visions, goals, and objectives for the future of Victor with the topics of land use, community design, housing, public services and facilities, agriculture, economic development, parks and recreation, natural resources, hazard mitigation, and transportation.	Adopted 2021	City of Victor and surrounding areas	Recreation Socioeconomics Traffic and Parking
Teton County, Idaho Affordable Housing Strategic Plan (https://www.tetoncountyidaho.gov/use_images/pdf/additionalInfo/tetoncountyidahoaffordablehousingplan-2-12-2019.pdf)	5-20 miles	There is a large number of cost-burdened households in Teton County, Idaho (i.e. households that spend more than 30 percent of their income on housing costs), and recently increases in housing prices have been outpacing increases in wages. The Affordable Housing Plan introduces tiered strategies for addressing issues with affordable housing in the county. Once implemented, these strategies would improve employee housing, short-term housing, housing education, and housing assistance programs, which would benefit local workers such as GTR employees.	Adopted 2019 Implementation: Ongoing	County-wide	Socioeconomics
Teton County, Idaho Economic Development Plan	5-20 miles	The Teton County, ID Economic Development Plan provides strategies and goals for economic development within Teton County, touching on business recruitment and development, physical asset development, tourism and marketing, and fostering community values. Relevant goals include developing improved recreation facilities, improving transportation infrastructure, and enhancing food, housing, and culture in Teton Valley.	Adopted 2013	County-wide	Recreation Socioeconomics Traffic and Parking

Project	Project Location (Distance to GTR SUP)	Project Description	Project Approval/ Implementation	Project Area (acres/length)	Resources Potentially Affected that Apply to this EIS
Ambient growth of Teton County, WY and Teton County, ID	0-60 miles	The populations of Teton County, WY and Teton County, ID are expected to grow in the coming years. Population growth and future development in both counties are likely to contribute to changes in conditions that will warrant new analyses. These changes could contribute to reasonably foreseeable future projects.	Ongoing	All of Teton County, WY and Teton County, ID	Air Quality Climate Change Hydrology Recreation Socioeconomics Traffic and Parking Wildlife
Guides and outfitters operating in Teton County, WY	0-60 miles	There are numerous guides and outfitters that operate within Teton Country and Teton Canyon. These organizations lead backcountry skiing, snowmobiling, rafting, horseback riding, and other adventure trips. Additional permits and operations may expand depending on future demands. These operations may contribute to recreational opportunities at GTR and in surrounding lands.	Ongoing	County-wide	Recreation

Appendix B: Forest Plan Consistency Analysis for Forest-wide and Management Area 4.2 Standards and Guidelines

Appendix B presents Forest-wide and Management Prescription 4.2 standards and guidelines relevant to the Grand Targhee Resort EIS. Resources and species with associated goals and objectives in the 1997 Forest Plan have been omitted from this analysis. The Forest Plan states, “[s]tandards are actions which must be followed or are required limits to activities in order to achieve forest goals. Deviations from standards must be analyzed and documented in a forest plan amendment. Guidelines are advisable courses of action which should be followed to achieve forest goals but are optional. Deviations from guidelines must be analyzed during project level analysis and documented in a project decision document but do not require a forest plan amendment.”³²³

It is important to note that overarching any project specific forest plan amendment, an amendment to the 1997 Revised Forest Plan for the Targhee National Forest (1997 Forest Plan) would be required to accommodate the proposed South Bowl (Alternatives 2 and 4) and Mono Trees (Alternatives 2 and 5) areas located outside of GTR’s existing SUP boundary on land that is currently designated as management prescription 2.1.2 *Visual Quality Maintenance* and management prescription 2.8.3 *Aquatic Influence Zone (AIZ)*. Therefore, the proposed development of this ski terrain would require that the Targhee National Forest Plan be amended to incorporate these two areas into the GTR SUP boundary and would result in the conversion of approximately 741 acres from management prescription 2.1.2 to management prescription 4.2 *Special Use Authorization Recreation Sites*. Approximately 125 acres of management prescription 2.8.3 *Aquatic Influence Zone* would also be affected under this alternative as the underlying management prescription 4.2 direction would supersede management prescription 2.8.3. As previously mentioned, under the 1997 Targhee Revised Forest Plan, Management Prescription 4.2 *Special Use Permit Recreation Site* prevails over other management prescriptions; therefore, only the underlying Management Prescription 2.1.2 would be amended under action alternatives that would incorporate SUP expansion areas into the GTR SUP boundary. In other words, Management Prescription 2.8.3 *Aquatic Influence Zone (AIZ)*, would persist under proposed conditions; however, it would be superseded by the direction of Management Prescription 4.2 *Special Use Permit Recreation Site*. No portion of the proposed SUP expansion would occur in areas classified as designated wilderness (management prescriptions 1.1.6, 1.1.7, and 1.1.8). Refer to **Figure 1** for a depiction of the proposed boundary expansion and Forest Plan management prescriptions. Furthermore, as stated on page III-107 of the 1997 Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..."

³²³ USDA Forest Service, 1998.

Forest-wide Standards and Guidelines

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
ECOLOGICAL PROCESSES AND PATTERNS					
<i>Properly Functioning Condition</i>					
Guidelines					
1. During landscape or watershed analyses, identify ecosystems in properly functioning condition and those at risk.	Consistent. Wetlands and streams were analyzed within GTR's existing and proposed SUP. Most streams are in proper functioning condition (refer to Table 3.15-1).				
2. Where appropriate, during project planning and implementation, identify and prioritize systems at risk for corrective treatment or action.	Consistent. All streams and wetlands were identified as being similar to channels found in higher elevations sub-alpine environments. There were 12,876 feet of Functional – At Risk streams present in the existing SUP. Proper PDC would be implemented to mitigate impacts to at risk streams (refer to Table 2.4-1. Project Design Criteria)	Consistent. All streams and wetlands were identified as being similar to channels found in higher elevations sub-alpine environments. There were 14,262 feet of Functional – At Risk streams identified within the Proposed Action project area. Proper PDC would be implemented to mitigate impacts to at risk streams (refer to Table 2.4-1. Project Design Criteria)	Consistent. All streams and wetlands were identified as being similar to channels found in higher elevations sub-alpine environments. There were 12,876 feet of Functional – At Risk streams present in the existing SUP. Proper PDC would be implemented to mitigate impacts to at risk streams (refer to Table 2.4-1. Project Design Criteria)	Consistent. All streams and wetlands were identified as being similar to channels found in higher elevations sub-alpine environments. There were 12,876 feet of Functional – At Risk streams present in the project area of Alternative 4. Proper PDC would be implemented to mitigate impacts to at risk streams (refer to Table 2.4-1. Project Design Criteria)	Consistent. All streams and wetlands were identified as being similar to channels found in higher elevations sub-alpine environments. There were 14,262 feet of Functional – At Risk streams identified within project area of Alternative 5. Proper PDC would be implemented to mitigate impacts to at risk streams (refer to Table 2.4-1. Project Design Criteria)
FIRE					
Guidelines					
1. When feasible and appropriate, use prescribed burning to dispose of slash in order to return the inorganic and organic chemicals in	Consistent. Under the No Action Alternative, there would be no changes to the current potential use	Consistent. All Alternatives include pile burning of slash when appropriate (refer to Section 2.3.1 and Table 2.4-1. Project Design Criteria)			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
the foliage and small woody material to the soil, to reduce fire hazard and to provide seed beds for natural regeneration.	of prescribed burning of slash.				

SOILS***Soil quality (current activity areas only)/forested ecosystems*****Guidelines**

1. Generally strive to maintain fine organic matter over at least 50 percent of the area. The preference is for fine organic matter to be undisturbed, but if disturbed, it should be of sufficient quantity and quality to avoid detrimental nutrient cycle deficits. If the soil and potential natural community are not capable of producing fine organic matter over 50 percent of the area, adjust minimum amounts to reflect potential soil and vegetation capability.	Consistent. No new ground disturbance would occur on NFS lands; therefore, thickness of mineral A and/or organic O horizons would continue to increase or decrease at existing rates.	Consistent. The following PDC have been included in order to be consistent with Soils Guidelines 1, 2, and 3: 1) During construction, maintenance and operations, stockpile topsoil and organic matter to the extent possible for redistribution, stabilization, and rehabilitation of the site after construction; 2) Prior to construction, soil surveys and measurements of thicknesses of A or organic horizons would be completed within the disturbance area to ensure no net loss of soil organic matter. GTR would hire a qualified soil scientist to complete soil surveys and measurements. Reports would be submitted as specified in the Construction Plan; 3) Ground cover, as a combination of revegetation, organic amendments, and mulch applications, would restore depths of soil A and/or organic ground cover; and 4) During site preparation treatments, avoid disturbing concentrated areas of soil wood to the greatest degree feasible. These measures have been assigned to maintain fine organic matter in disturbed areas and avoid detrimental nutrient cycle deficits (Guideline 1). These measures would also ensure that disturbed areas sustain woody residue requirements for materials three inches in diameter or larger (Guideline 2). Lastly, these measures would help avoid disturbing concentrated areas of soil wood (Guideline 3).
2. Woody Residue Requirements for Materials three inches in Diameter or larger Sustain site productivity by providing the following minimum amounts of woody residue dispersed on the site: (refer to Table A at the end of this Appendix)	Consistent. No new ground disturbance would occur on NFS lands under the No Action Alternative. Therefore, Woody Residue Requirements would be maintained.	
3. During site preparation treatments, strive to avoid	Consistent. No new disturbance would occur	

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
disturbing concentrated areas of soil wood.	on NFS lands in areas of soil wood under the No Action Alternative.				
Slope Stability for Mineral Activities					
Standards					
1. In areas of high mass instability, that have been ground verified, occupancy shall not be allowed.	Consistent. No new ground disturbance would occur on NFS lands of high mass instability under the No Action Alternative.	Consistent. Under all Alternatives, no new ground disturbance would occur on NFS lands of high mass instability.			
Guidelines					
2. In areas identified as having moderate instability, and that are ground verified, occupancy may be allowed provided it can be shown the project design can prevent unacceptable resource damage.	Consistent. No new ground disturbance would occur on moderate instability NFS lands under the No Action Alternative.	Consistent. The project area contains one area of moderate instability, South Bowl. The Rockfall and Landslide Hazards Report contains a review of existing landslide mapping and imagery, coupled with field reconnaissance, that was used to examine slope stability within the South Bowl area. It was determined that landslide movement is not a critical constraint to building the South Bowl Lift. Furthermore, PDC have been incorporated into Proposed Action to ensure that soil stability and	Consistent. Alternative 3 would occur within areas identified as having moderate instability; however, proper PDC would be implemented to mitigate impacts to soil resources.	Consistent. The project area contains one area of moderate instability, South Bowl. The Rockfall and Landslide Hazards Report contains a review of existing landslide mapping and imagery, coupled with field reconnaissance, that was used to examine slope stability within the South Bowl area. It was determined that landslide movement is not a critical constraint to building the South Bowl Lift. Furthermore, PDC have been incorporated into Alternative 4 to ensure that soil stability and	Consistent. Alternative 5 would occur within areas identified as having moderate instability; however, proper PDC would be implemented to mitigate impacts to soil resources.

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		landslide hazards are minimized. Prior to implementation GTR shall submit grading plans for the proposed lift for agency review and authorization.		landslide hazards are minimized. Prior to implementation GTR shall submit grading plans for the proposed lift for agency review and authorization.	
CAVES					
Standards					
4. Cave entrances will not be altered or used as disposal sites for slash or other refuse and no action will be taken to prevent or hinder ingress or egress of cave-dependent wildlife. Gating of cave entrances will be allowed as long as physical alteration of the entrance is not needed to construct the gate. Wilderness values will also be considered prior to installing such structures.	N/A				
5. Management activities will not be permitted within any area draining into a cave if they are likely to affect the cave ecosystem through sedimentation, soil sterilization, the addition of nutrients or other chemicals (including pesticides, herbicides, and fertilizers) or by changing the cave's natural hydrology.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
6. Do not allow alteration of natural surface drainage into or away from caves.	N/A				
Guidelines					
1. Restrict logging, road construction, and other uses of heavy equipment above or in the vicinity of a cave with a thin roof, or the course of such a cave, if there is a potential for damage.	N/A				
2. Retain vegetation in the vicinity of a cave or cave course if it is required to protect the cave's microenvironment (habitat, climate, vegetation, etc.).	N/A				
3. Fell trees away from the cave and its course if timber harvesting is permitted in the vicinity of a cave.	N/A				
LANDS					
Standards					
1. Allow for essential access for repair and maintenance of facilities within energy corridors.	N/A				
Guidelines					
1. Avoid parallel corridors Consolidate facilities within existing energy corridors where feasible.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
2. Bury new lines and upgrades/replacements when feasible.	N/A				
3. Proponents of new facilities within existing corridors, and new corridor routes, must demonstrate clearly that the proposal is in the public interest, and that no other reasonable alternative exists to public land routing.	N/A				
MINERALS					
Locatable and Mineral Materials					
Standards					
2. The Forest is open to exploration and development and production of locatable, leasable, and mineral material resources unless otherwise specified in the management prescriptions.	N/A				
Guidelines					
1. Common minerals give priority to use of currently developed common mineral (natural gravel and hard rock) material sources over undeveloped sources. Exceptions should be made when existing sources are unable to economically supply the quality and quantity of material needed or when conflicts with other resource uses are found to be unacceptable.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
3. Oil and gas pipelines and other related utilities should share utility corridors except as needed to meet other resource objectives.	N/A				
FISHERIES, WATER, AND RIPARIAN RESOURCES					
Watershed General					
Guideline					
1. Not more than 30 percent of any of the principal watersheds and their subwatersheds should be in a hydrologically disturbed condition at any one time.	Consistent. Under the No Action Alternative, no ground disturbance would occur; thus, no impacts to principal watersheds and their subwatersheds would occur.	Consistent. All Alternatives would not cause more than 30 percent of any principal watershed and their subwatersheds to be in a hydrologically disturbed condition (refer to Section 3.15 – Hydrology).			
Fisheries and other aquatic resources					
Standards					
1. New special use permits or new Forest Service projects involving instream facilities (exclusive of facilities retrofitted to existing dams) must maintain minimum instream flows as specified by the Forest or State and, on fish-bearing streams provide for fish passage and include screening devices to prevent accidental loss of fish.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guidelines					
2. When reauthorizing existing special use permits or existing Forest Service projects involving instream facilities (exclusive of facilities retrofitted to existing dams), where feasible, provide for minimum instream flows as specified by the Forest or State and, on fish-bearing streams, where feasible, provide for fish passage and include screening devices to prevent accidental loss of fish.	N/A				
3. Within subwatersheds occupied by native cutthroat trout or designated as vital to meeting recovery goals, avoid management activities that are found, through interdisciplinary site-specific analysis, to either reduce habitat features below the expected values described above or retard the rate of recovery of degraded habitat features. Refer to Table A at the end of this Appendix.	Consistent. There would be no impacts to subwatersheds containing native cutthroat trout under the No Action Alternative.	Consistent. The action alternatives may have limited indirect impacts to cutthroat trout habitat, which exists downstream of the project area; however, these impacts are not likely to cause a trend towards federal listing or loss of population viability (refer to Section 3.12 – Wildlife and Fish). Additionally, PDC such as erosion mitigation practices and avoidance of riparian habitats would mitigate impacts to downstream habitat and populations.			
4. Emphasize watershed analysis or site-specific analysis to more accurately define fisheries habitat features when planning or conducting management activities within Native Trout Watersheds. Refer to Table A at the end of this Appendix.	Consistent. Under the No Action Alternative there would be no impacts to fish habitat.	Consistent. Watershed analysis was prepared and impacts to fisheries habitat features were considered in the design of proposed project elements. Habitat for Yellowstone Cutthroat is primarily located downstream of the project area, so field-based analysis was not prepared for the species.			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
5. Values for fish habitat features may be adjusted based on field analysis or literature review. A clear rationale supporting the expansion must be documented. Refer to Table A at the end of this Appendix.	Consistent. Under the No Action Alternative there would be no impacts to fish habitat.	Consistent. Teton Creek is a fish bearing stream for Cutthroat trout, but is downstream of the project area. However, Mill Creek, which is located within the project area, flows into Teton Creek. Although impacts to Mill Creek could impact fish habitat features in Teton Creek, PDC are included in Table 2.4-1. Project Design Criteria to protect fish habitat in Teton Creek.			

VEGETATION

Standard		
2. Forest vegetation manipulation on lands not included in the ASQ will be accomplished to meet the individual management prescription direction. Production of wood products will not be the primary consideration. Harvest will be accomplished with sufficient mitigation to protect and maintain soil, wildlife, visual, and aquatic resources.	Consistent. Under the No Action Alternative there would be no vegetation manipulation.	Consistent. PDC included in Table 2.4-1. Project Design Criteria are intended to protect and maintain soil, wildlife, visual, and aquatic resources.
4. Vegetation manipulation through timber harvest on lands not included in the ASQ will not exceed 20 million board feet (MMBF) per decade.	N/A	
6A3. Use the definition of old growth characteristics by forest type found in "Characteristics of Old-Growth Forests in the Intermountain Region" (USDA Forest Service 1993).	Consistent. Definition used throughout analysis.	

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
9. Do not conduct management activities which alter canopy vegetation within 400 feet of a Natural Resources Conservation Service (NRCS) snow measuring site without first contacting NRCS. Legal locations of these sites are in the Forest Geographic Information System (GIS).	Consistent. Unanalyzed canopy vegetation alteration would not occur under the No Action Alternative.	Consistent. NRCS snow measuring sites would not be affected by the proposed alterations to canopy vegetation.			
Guidelines					
1. Where appropriate, use methods of vegetation treatment that emulate natural ecological processes to maintain or restore properly functioning ecosystems.	Consistent. Vegetation treatment would not occur under the No Action Alternative.	Consistent. Project Design Criteria has been included in Table 2.4-1 to reduce potential impacts of vegetation removal.			
3. Vegetation manipulation may include mechanical treatments, commercial or noncommercial timber harvest of wood products, prescribed fire, or other appropriate methods.	Consistent. Vegetation manipulation would not occur under the No Action Alternative.	Consistent. The discussion of construction practices related to tree removal are described in Section 2.3.1 of the <i>DEIS</i> .			
5. Treat aspen plant communities to reduce encroaching conifers and maintain a balance of age classes for these communities.	N/A	N/A			
6A. In each principal watershed, the combination of old growth and late seral forest stage acres will be 20 percent or more of the forested acres. Where it exists, at least half of this (ten percent of the forested acres) should meet old growth characteristics.	Consistent. Under the No Action Alternative, late seral and old growth forest would not change from existing conditions. Habitat and existing forest stands of late seral and old growth would	Consistent. The proposed project area includes Teton Creek (TPW 19) and Leigh Creek (TPW 20) watersheds. Resource analysis utilizing the best available data has determined that all action alternatives would impact less than a percent of the late seral and old growth stands in these watersheds. The 20 percent or more threshold of old growth and late seral stands within the study area TPWs would be maintained or negligibly impacted by the action alternatives under a variety of modeling scenarios utilizing the best available existing and reliable data; therefore, indicating compliance with this guideline for TPW 19 and TPW 20 as described in Vegetation Section Standards and Guidelines #6, Old Growth and Late Seral Forest Stages, Guideline A (page III-12).			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<p>remain the same, barring any impacts from insects, disease, or wildfire. Aspen and conifer saplings that would gradually change through natural succession to later seral stages could be impacted by the expected increase in visitation at GTR. Visitation during the summer and winter is expected to increase and operation in the form of grooming and mowing could directly impact saplings, and thus succession to later seral stages and old growth. Overall, these direct impacts would be minimal in the long-term and would not reduce the percent of late seral and old growth forest stands within the TPW19 and TPW20.</p>	<p>Refer to Section 3.12 of the <i>DEIS</i> for a specific discussion of old growth and late seral stand quantities within the study area watersheds and quantification of anticipated impacts by action alternative.</p>			
6A1. For aspen and conifer forest types, acres classified as old growth and late seral should be in blocks over 300 acres in size (a block can consist of a combination of old growth and late successional forest types).		<p>Consistent. Late seral and old growth data was organized into contiguous polygons (blocks) of 300 or more acres for one of the modeling scenarios that was considered in the analysis of this resource. For TPW 20, the only data available, the mid-level vegetation data was used. When merged and parsed into 300-acre polygons, there were not any late seral and old growth areas that met the qualifications within the existing SUP in TPW 20.</p> <p>For TPW 19, two existing data sets (i.e., lynx habitat old growth classification and mid-level vegetation data) were merged into one layer and parsed out the polygons under 300 acres. Based on this merged layer, late seral and old growth forest are present within the existing SUP, Mono Trees, and South Bowl. Proposed</p>			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<p>Within these blocks</p> <p>a.) Maintain 80 percent or greater primary cavity nesting species habitat capability (see Wildlife Standards and Guidelines - Snag/Cavity Nesting Habitat)</p> <p>b.) Maintain the wildlife dead and down woody material guidelines (see Wildlife Standards and Guidelines - 1 Dead and Down Material)</p> <p>c.) Silvicultural techniques may be used to maintain or improve old growth and late successional characteristics</p>		<p>impacts were overlapped with the approximate late seral and old growth forest areas to determine forest impacts across all alternatives within TPW 19.</p> <p>PDC included in Table 2.4-1 are intended to promote the goals of a.) b.) and c.) as it relates to cavity nesting species habitat capability, dead and down woody material, and silvicultural techniques. Specifically, Table 2.4-1 states, “Where practicable and deemed safe, snags shall be left in place to preserve existing biological potential...” and “Where practicable and deemed safe, woody debris shall be left in place to preserve existing logs in size classes 1, 2 and 3. If logs are to be left consult with forest timber personnel to ensure material isn’t left in a manner that shall encourage harmful insect infestation.”</p> <p>As described in the previous cell, multiple data sets were considered to assess the project impacts to old growth and late seral stands. Parsing old growth and late seral stands into blocks over 300 acres in size was one way that data sets were considered; however, to understand the full scope of potential impacts to TPW 20, this approach was also excluded from certain modeling scenarios.</p> <p>PDC for nesting species habitat and woody material are provided for all action alternatives in Table 2.4-1. Project Design Criteria and discussed further in Chapter 3 Sections 3.12 and 3.13 – Vegetation and Wildlife.</p>			
6A2. If a catastrophic event (such as fire) reduces the acres of old growth and late seral forest below 20 percent of the forested acres in a principal watershed, identify replacement forested acres to achieve the 20 percent. When necessary, use silvicultural techniques to promote old growth and late seral characteristics in the replacement acres.			N/A		
6A3. Use the definition of late seral stages by forest type in Table C at the end of this Appendix.			Consistent. Definition used throughout analysis.		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
6A7. Conduct vegetation manipulations in a cost-effective manner. Manipulations should emphasize desired ecological and multiple-use outcomes over being above cost.	Consistent. Under the No Action Alternative there would be no vegetation manipulation.	Consistent. The proponent would bear all costs of vegetation manipulation, which would be done in accordance with PDC included in Table 2.4-1. Project Design Criteria			
8. Maintain, and where possible, increase unique or difficult-to-replace elements or habitats such as whitebark pine, and areas of high species diversity, such as aspen, riparian zones, etc.	Consistent. Under the No Action Alternative there would be no vegetation manipulation.	Consistent. PDC included in Table 2.4-1. Project Design Criteria is intended to maintain unique or difficult-to-replace elements or habitats to the greatest extent possible.	Consistent. PDC included in Table 2.4-1. Project Design Criteria is intended to maintain unique or difficult-to-replace elements or habitats to the greatest extent possible.	Consistent. PDC included in Table 2.4-1. Project Design Criteria is intended to maintain unique or difficult-to-replace elements or habitats to the greatest extent possible.	Consistent. PDC included in Table 2.4-1. Project Design Criteria is intended to maintain unique or difficult-to-replace elements or habitats to the greatest extent possible.
10. Within big sagebrush (<i>Artemisia fridenfata</i> & varieties)/grassland habitats strive for canopy coverage distributions on a subwatershed basis (generally 2,000 to 6,000 acres in size) of - Less than five percent of a subwatershed in a less than five percent canopy coverage class - Seventy-five percent of a subwatershed in a well distributed mosaic of canopy coverage ranging from 5-30 percent - Twenty percent of a subwatershed in a greater than 30 percent canopy coverage class	N/A				
Plant Species Diversity					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Standards					
4. Information on the presence of listed threatened, endangered or sensitive plant species will be included in all assessments for vegetation and/or ground disturbing management activities. Appropriate protection and mitigation measures will be applied to the management activities.	Consistent. All Alternatives considered threatened, endangered or sensitive plant species within their project areas.				
Guidelines					
1. Native plant species from genetically local sources will be used to the extent practicable for erosion control, fire rehabilitation, riparian restoration, forage enhancement, road right-of-way seeding, and other revegetation projects.	Consistent. The No Action Alternative would not require vegetation restoration.	Consistent. Under all Alternatives disturbed areas would be promptly revegetated after the site has been satisfactorily prepared. Repeat seeding would occur until satisfactory re-vegetation is accomplished. Reseeding would use a native seed mixture using a variety of native seed grasses, wildflowers and forbs.			
2. Areas planned for nonnative seedings or plantings of nonnative woody species need to be evaluated to determine the impacts to the native flora within the analysis area and habitats adjacent to it.	Consistent. The No Action Alternative would not require seeding of nonnative plants.	Consistent. Under all Alternatives, native species would be used to the extent possible; however, to prevent soil erosion, non-persistent, non-native perennials or sterile perennials may be used while native perennials become established. A monitoring protocol for vegetative cover standards that would be implemented for a minimum of three years following seeding. Monitoring would document the plant species present, their likely origin (i.e., seed mix, colonizer, residual), the presence of invasive non-native plants and noxious weeds, and any problems with erosion or sedimentation. Recommendations for site improvements, if necessary, would also be provided.			
3. Introduced species should be utilized in project seedings where native species would not meet the objectives of erosion control, such as in high use or impact areas, and where the effects on local, native	Consistent. The No Action Alternative would not require introduced species.	Consistent. Under all Alternatives, native species would be used to the extent possible; however, to prevent soil erosion, non-persistent, non-native perennials or sterile perennials may be used while native perennials become established. A monitoring protocol for vegetative cover standards that would be implemented for a minimum of three years following seeding. Monitoring would document the plant species present, their likely origin (i.e., seed mix, colonizer, residual), the presence of invasive non-native plants and noxious weeds, and			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
flora is minimal, sites that are currently dominated by introduced species and use of nonnative species has not degraded the adjacent native flora; and sites where the management objective is to utilize nonnative species in one area to prevent degradation of other natural areas.		any problems with erosion or sedimentation. Recommendations for site improvements, if necessary, would also be provided.			
<i>Ute Ladies’ Tresses</i>					
Standards					
1. For known populations within livestock grazing allotments, provide appropriate protection, particularly during the flowering and seed-set periods (generally August and September)	Consistent. No Ute Ladies’ Tresses would be impacted by the No Action Alternative.	Consistent. Ute Ladies’ Tresses were not determined to be present within the project area; therefore, this species would not be impacted by any of the action alternatives.			
2. Allow no ground disturbing activities or changes in hydrology within occupied habitat without review by botanist and interdisciplinary team.	Consistent. No ground disturbing activities would occur in occupied Ute Ladies’ Tresses habitat.	Consistent. Ute Ladies’ Tresses were not determined to be present within the project area; therefore, this species would not be impacted by any of the action alternatives.			
WILDLIFE					
<i>Dead and Down Material</i>					
Guidelines					
1A. On at least 60 percent of the forested acres of each analysis area an average of 21 logs per acre should be left consisting of logs in decomposition classes 1, 2 and 3 where they exist (USFS, 1979)	Consistent. Under the No Action Alternative, no trees would be cleared or ground disturbed.	Consistent. Under all Alternatives, approximately 21 logs per acre would be left in each decomposition class.			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<p>(Note unmanaged stands or stands where management did not include the removal or piling of down material, meet forestwide standards and guidelines for down woody material).</p> <p>When this amount of down material is not present on at least 60 percent of the forested acres in an analysis area, an average of 42 logs per acre should be left in all activity areas (harvest units) consisting of logs in all decomposition classes where they exist. Fewer logs may be left if fuel loading would exceed 25 tons per acre.</p>					
<p>1A1. Logs should be at least seven inches in diameter at the small end, be at least 20 feet long, and have a volume of at least ten cubic feet (e.g., a log averaging 9.5 inches in diameter and 20 feet long)</p> <p>a. Smaller size logs may only be used in meeting this volume criteria if the area is incapable of producing larger trees, or the stand is too young to produce these trees. In these cases, logs representing the largest tree diameter class present in the stand should be retained and at least 200 cubic feet (approximately 2.3 tons) per acre</p>	<p>Consistent. Under the No Action Alternative, normal forest conditions would be maintained.</p>	<p>Consistent. Under All Alternatives, dead and downed logs would be within the appropriate size range.</p>			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
of down logs shall be retained. b. For every two-acre area in an activity area, a minimum of two logs should be left, where they exist, to maintain distribution of down woody material.					
<i>Winter Feeding of Big Game</i>					
Standards					
2. Allow no new permanent feed grounds for wintering big game animals	Consistent. Under all Alternatives, no new permanent feed grounds would be established.				
<i>Animal Damage Management</i>					
Standards					
3. Animal Damage management will be conducted in compliance with the 1996 "APHIS-ADC Predator Damage Management in Southern Idaho" Decision Notice and FONSI, selected alternative "Current Program with Livestock Protection Collar. "	N/A				
3b. Problem wolves will be managed according to the Nonessential Experimental Population for Gray Wolves Final Rule (USDI, 1994b)	N/A				
3c. Problem grizzly bears will be addressed according to the Interagency Grizzly Bear	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Committee nuisance bear guidelines (IGBC, 1994).					
3d. Use of toxicants will not be allowed on the Forest.	N/A				
Guidelines					
3a. Annual ADC work plans will be prepared using the 1990 Targhee National Forest "Forest-Wide Predator Control Environmental Assessment" as a framework for conducting predator control activities on the Forest. Deviations from the direction in the 1990 EA will be considered when necessary to deal with particular problem animals.	N/A				
Snag/Cavity Nesting Habitat					
Standards					
4. Public workforce and contractor safety will be considered and provided for in selecting the arrangement of retained snags and trees.	Consistent. Under All Alternatives public and contractor safety would be assessed prior to selecting the arrangement of retained snags and trees.				
Guidelines					
1. Retain snags within all management prescription areas allowing timber harvest (refer to the Tables D & E at the end of this Appendix for snag requirements of cavity nesting species, refer to the wildlife standards and guidelines in	Consistent. No cavity nesting species habitat is expected to be impacted through the No Action Alternative.	Inconsistent. Tables D and E identify the number of snags required to maintain biological potential in an area for woodpecker populations. The only woodpecker species with habitat within the project area is the Three-toed Woodpecker. For Three-toed Woodpecker, the guideline requires that 59 snags per 100 forested acres in aspen, Douglas fir, spruce/fir, and lodgepole pine forests for 100% biological potential. Specifically, based on the amount of glading (where only 5-40% of vegetation removal occurs) versus trails and grading (100% of vegetation removal) that is proposed in the project area, maintaining the standard of 59 snags per 100 forest acres would be maintained. Additionally, following specific PDC requiring nesting species surveys prior to			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
each management prescription for the specific biological potential to be achieved)		project implementation, under all Alternatives snags would be retained where appropriate for cavity nesting species (refer to Table 2.4-1. Project Design Criteria). Specifically, in management prescription 2.8.3 <i>Aquatic Influence Zone</i> , the maintaining of 59 snags per 100 acres only applies to the AIZ outside of the existing SUP because the management prescription 4.2 <i>Special Use Authorization Recreation Sites</i> that covers the existing SUP prevails over 2.8.3 and no snag requirements are stated for 4.2. 100% biological potential for Three-toed Woodpeckers would likely not be maintained where impacts intersect the AIZ in the Mono Trees expansion area; however, a Forest Plan amendment is proposed to incorporate the expansion areas into the SUP boundary which would make the AIZ areas subject to the underlying direction of management prescription 4.2. The reader is referred to Chapter 3, Section 3.16 Wildlife for a discussion of potential impacts to species that rely on snags and Appendix C for the Forest Plan amendments.			
2. Retain live trees for future snag recruitment using the guidelines outlined in Table F at the end of this Appendix to achieve various percentages of biological potential.	Consistent. No cavity nesting species habitat is expected to be impacted through the No Action Alternative.	Consistent. Complete removal of vegetation for trails and grading would decrease the amount of snag habitat within the project area; however, PDC has been included under all Alternatives, requiring that to the extent possible, live trees meeting the necessary characteristics would be retained for future snag recruitment (refer to Table 2.4-1. Project Design Criteria). Additionally, glading activities that only remove 5-40% vegetation may still provide suitable habitat in forested areas that also have snags and dying trees left remaining for forage and nesting habitat as well as a significant amount of forest canopy remaining for cover. Furthermore, habitat modeling for the Targhee Forest Species Viability Report estimates that 74 acres of “very good” habitat and 29,309 acres of “good habitat” for the Three-toed Woodpeckers exists throughout the TNF. Therefore, reduction of suitable habitat due to the proposed project is not expected to impact the viability of the Targhee Forest Three-toed Woodpecker population given availability of alternate suitable habitat. The reader is referred to the Wildlife BE and Chapter 3, Section 3.16 Wildlife for a further discussion of potential impacts to species that rely on snags.			
3. In analysis areas where snag numbers are low (at or approaching management minimums), no dead standing trees should be harvested.	Consistent. No cavity nesting species habitat is expected to be impacted through the No Action Alternative.	Consistent. Complete removal of vegetation for trails and grading would decrease the amount of snag habitat within the project area; however, PDC has been included under all Alternatives, requiring that to the extent it does not compromise skier safety or operations, dead standing trees would remain in place (refer to Table 2.4-1. Project Design Criteria). Additionally, glading activities that only remove 5-40% vegetation may still provide suitable habitat in forested areas that also have snags and dying trees left remaining for forage and nesting habitat as well as a significant amount of forest canopy remaining for cover. Furthermore, habitat modeling for the Targhee Forest Species Viability Report estimates that 74 acres of “very good” habitat and 29,309 acres of “good habitat” for the Three-toed Woodpeckers exists throughout the TNF. Therefore, reduction of suitable habitat due to the proposed project is not expected to impact the viability of the Targhee Forest Three-toed Woodpecker population given availability of alternate suitable habitat.			
Grizzly bear habitat					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Standards					
2. Those areas shown as Management Situation 3 (MS3) habitat on Map #5 of the 1985 Forest Plan will continue to be managed as MS3 habitat.	Consistent. Management Situation 3 does not occur within the existing or proposed GTR SUP area.				
Guidelines					
1. The grizzly bear education program will focus on residents in residential and summer home areas, developed recreation site users, wilderness users, hunters, outfitters and guides, and permittees.	Consistent. The grizzly bear education program would continue to occur with residents and GTR SUP users.				
Bald Eagle Habitat – In Occupied Nesting Zones (Zone 1) and Primary Use Areas (Zone 11) apply the following					
Standards					
1B. No new roads in Zone I.	N/A: There is no bald eagle habitat within the project area				
1D. No new developed recreation sites or facilities in Zone I.	N/A: There is no bald eagle habitat within the project area				
1E. Manage existing recreation use at levels which do not adversely affect use and productivity of the nest site.	N/A: There is no bald eagle habitat within the project area				
1F. Use the "No Surface Occupancy" stipulation for all mineral’s activities.	N/A: There is no bald eagle habitat within the project area				
1H. Use silvicultural techniques which maintain or promote mature and old growth timber stand	N/A: There is no bald eagle habitat within the project area				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
characteristics in both the short and long-term but reduce the risks of insects and disease epidemics.					
1I. Vegetation management can only occur between September 1 and January 31.		N/A: There is no bald eagle habitat within the project area			
1K. Prohibit new structures that have the potential to cause direct mortality to bald eagles (e.g., power lines).		N/A: There is no bald eagle habitat within the project area			
1M. Prohibit wildlife management or predator control activity with the potential to cause mortality to bald eagles (such as exposed traps).		N/A: There is no bald eagle habitat within the project area			
2. Within Home Ranges (Zone III) follow existing site-specific management plans (when they exist) for each bald eagle territory, or Zone III management direction in the Bald Eagle Management Plan for the Greater Yellowstone Area when site-specific management plans do not exist.		N/A: There is no bald eagle habitat within the project area			
3. Within Zones I, 11, and 111, prohibit all use of herbicides and pesticides which cause eggshell thinning as determined by EPA labeling.		N/A: There is no bald eagle habitat within the project area			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guidelines					
1A. Minimize all human activities from February 1 to August 1.	N/A: There is no bald eagle habitat within the project area				
1B. Avoid building new roads in Zone II.	N/A: There is no bald eagle habitat within the project area				
1C. Manage human use on existing roads at levels which do not adversely affect use and productivity of the nest site.	N/A: There is no bald eagle habitat within the project area				
1D. Avoid building new recreation sites or facilities in Zone II.	N/A: There is no bald eagle habitat within the project area				
1G. If eagles choose to establish new nest sites and use areas in an area already receiving human use, the human activities may be restricted or modified. Expanded human activity, however, should be discouraged.	N/A: There is no bald eagle habitat within the project area				
1J. Use "control" as the appropriate suppression response for wildfires to minimize loss of habitat.	N/A: There is no bald eagle habitat within the project area				
1L. Permit historic levels of livestock use as long as no adverse impacts (such as abandonment of nest territory or reproduction	N/A: There is no bald eagle habitat within the project area				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
failures) occur related to this activity. Manage livestock to allow successful reproduction of cottonwood where applicable.					
4. Recreation activities and developments will be designed to minimize conflicts with bald eagle wintering and migration habitat.	N/A: There is no bald eagle habitat within the project area				
5. New roads and trails will be located to avoid bald eagle wintering and migration habitat. Where these areas cannot be avoided the roads and trails will be designed and located to minimize impacts to eagles.	N/A: There is no bald eagle habitat within the project area				
Gray Wolf Habitat					
Standards					
1. Restrict intrusive human disturbances (motorized access, vegetation management, livestock grazing, etc.) within one mile around active den sites and rendezvous sites between April 1 and June 30, when there are five or fewer breeding pairs of wolves in the Yellowstone Nonessential Experimental Population Area (applies to the portion of the Forest east of Interstate 15) or the Central Idaho Nonessential Experimental Population Area (applies to the portion of the Forest west of Interstate 15). After six or more	Consistent. There are no known active den sites or rendezvous sites within the project area; however, the Chagrin wolf pack is located along the Idaho/Wyoming border between Alta, Wyoming and Victor, Idaho in the vicinity of the project area. Wolf calls were also detected on audio recorders in April 2020, west of the project area in the Bustle Creek drainage which may be from individuals of the Chagrin wolf pack. Proposed activities within the project area could cause disturbance that reduces the suitability of habitat for wolves in the area. A limitation in food sources in the project area for wolves could also occur if ungulate species are reduced in number or relocate outside of the project area. Alternative 3, no SUP expansion, would likely have minimal effects on wolf habitat usage because the existing SUP is heavily developed and sees high levels of human activity, which wolves tend to avoid. Impacts to wolves could be highest if expansion of the SUP were to occur under Alternatives 2, 4, or 5. If specific impacts to threatened, endangered, and Region 4 sensitive species and/or their habitats, including dens, are identified during project implementation, project operations in the immediate vicinity would be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts.				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
breeding pairs become established in each experimented population area, land-use restrictions will not be needed (USDI Fish and Wildlife Service 1994 a and b).					
2. The ability of individuals holding grazing permits on public land to harass adult wolves in an opportunistic, non-injurious manner will become part of their permit conditions so it is clearly understood exactly what can occur. There is a seven-day reporting requirement (USDI Fish and Wildlife Service 1994 a and b).			N/A		
3. The following conditions and criteria will apply in determining the problem status of wolves (USDI Fish and Wildlife Service 1994 a and b): a.) Wounded livestock or some remains of a livestock carcass must be present with clear evidence that wolves were responsible for the damage and there must be a reason to believe that additional losses would occur if the problem wolf or wolves were not controlled Such evidence is essential since wolves may simply feed on carrion they have found while not being responsible for the kill b.) Artificial or intentional feeding			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<p>of wolves must not have occurred Livestock carcasses not properly disposed of in an area where depredations have occurred will be considered attractants</p> <p>Removal or resolution of such attractants must accompany any control action Livestock carrion or carcasses not being used as bait in an authorized control action (by agencies) must be removed, burned, treated with an acceptable chemical repellent, or otherwise rendered such that the carcass(es) will not attract wolves using methods approved by the District Ranger</p> <p>c.) Animal husbandry practices previously identified in existing approved Allotment Management Plans and annual operating plans for allotments must have been followed</p>					
<p>4. Prior to the establishment of six breeding pairs, depredating females and their pups will be captured and released at or near the site of capture, one time prior to October 1. If depredations continue, or if six packs are present, females and their pups will be removed (USDI Fish and Wildlife Service 1994 a and b).</p>			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guidelines					
4. If additional livestock depredations are likely, proper animal husbandry practices are employed (proper disposal of livestock carcasses, etc.), artificial feeding does not take place, and AMPs are followed, the Forest may implement procedures to harass, capture, move, or kill wolves that attacked livestock (defined as cattle, sheep, horses, or mules only) on National Forest land.	N/A				
Peregrine Falcon Habitat					
Standards					
2. Within 15 miles of all known nest sites, prohibit all use of herbicides and pesticides which cause eggshell thinning as determined by risk assessment (USDA-Forest Service, September 1992)	Consistent. There are no known peregrine falcon nest sites within the project area; however, the project area contains suitable nesting habitat for the species. In the past the species has nested and fledged its young in the Apostles eyrie, which is located in Teton Canyon only 0.12 miles south of the project area. The Apostles eyrie was last occupied by nesting peregrine falcon in 1996. Under all Alternatives, pretreatment of existing infestations of noxious weeds would be conducted with approved herbicides prior to implementation. Herbicide choices and application rates would be based on direction from the District/Forest Weed Program Manager and would preclude the use of herbicides that cause eggshell thinning. Herbicides and pesticides which cause eggshell thinning are not permitted on the Forest.				
3. Restrict climbing and other human disturbances from March 15 through July 31 to avoid adverse impacts at known falcon nest sites.	Consistent. The No Action Alternative would be a continuation of existing operations within the existing SUP. Falcons nesting at the Apostles eyrie in previous years do not appear to have been deterred by activity within the existing SUP	Inconsistent. There are no known peregrine falcon nest sites within the project area; however, the project area contains suitable nesting habitat for the species. In the past the species has nested and fledged its young in the Apostles eyrie, which is located in Teton Canyon only 0.12 mile south of the project area. The Apostles eyrie was last occupied by nesting peregrine falcon in 1996. If falcons were to nest in the area in the future, the PDC preventing vegetation removal during the migratory bird nesting period would minimize impacts. Additionally, falcons nesting at the Apostles eyrie in previous years do not appear to have been deterred by activity within the existing SUP and less than 2 miles from the eyrie. However, the proposed projects would bring increased noise and activity closer to potential and historical nesting habitat in Teton Canyon which could deter or disrupt nesting behavior of Peregrine Falcons during March 15 to July 31. Therefore, a project specific Forest Plan amendment is proposed to exempt the projects from this standard. Refer to Appendix C			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	and less than 2 miles from the eyrie. Therefore, impacts to falcons under the No Action Alternative would be negligible.	– Forest Plan Amendments for more information on this Forest Plan amendment. If specific impacts to threatened, endangered, and Region 4 sensitive species and/or their habitats, including nests, are identified during project implementation, project operations in the immediate vicinity would be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts.			
Guidelines					
1. For proposed projects within two miles of known falcon nests consider such items as 1) human activities (aircraft, ground and water transportation, high noise levels, and permanent facilities) which could cause disturbance to nesting pairs and young during the nesting period March 15 to July 31, 2) activities or habitat alterations which could adversely affect prey availability.	Consistent. The No Action Alternative is a continuation of existing operations and maintenance practices. Human disturbance would stay the same within the existing SUP and falcons would not be further disturbed than existing conditions.	Inconsistent. There are no known peregrine falcon nest sites within the project area; however, the project area contains suitable nesting habitat for the species. In the past the species has nested and fledged its young in the Apostles eyrie, which is located in Teton Canyon only 0.12 miles south of the project area. The Apostles eyrie was last occupied by nesting peregrine falcon in 1996. However, the proposed projects would bring increased noise and activity closer to potential and historical nesting habitat in Teton Canyon which could deter or disrupt nesting behavior of Peregrine Falcons during March 15 to July 31. Therefore, the project specific Forest Plan amendment as referenced for Standard 3 above is proposed to exempt the projects from this guideline. Refer to Appendix C – Forest Plan Amendments for more information on this Forest Plan amendment. If specific impacts to threatened, endangered, and Region 4 sensitive species and/or their habitats, including nests, are identified during project implementation, project operations in the immediate vicinity would be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts.			
Goshawk Habitat					
Standards and Guidelines					
1997 Forest Plan standards and guidelines related to goshawk habitat are provided in table format. This Table is included in the <i>Supporting Tables</i> section of this Appendix. Refer to Table G at the end of this Appendix for all management standards and guidelines.	Consistent. The No Action Alternative is a continuation of existing operations and management practices. Although active Northern Goshawk nesting was documented at three nest sites within 1 mile west of the project area, these existing practices would not	Inconsistent. Inconsistency relates to the standards for <i>size of each area</i> (described in the second row of Table G) and the <i>management season</i> (described in the eighth row of Table G). The following discussion relates to information provided in cells with the	Consistent. Active Northern Goshawk nesting was documented at three nest sites within 1 mile west of the project area for four consecutive years from 2019 to 2022 indicating that a breeding pair of birds occupies a territory in the area, referred to as the Mill Creek territory by the Forest Service. A 200-acre nesting area, 400-acre fledging area, and 5,400 acre foraging area were delineated in suitable habitat surrounding the nest sites. These areas include some forest habitat in the proposed Mono Trees expansion area. Under Alternative 3 and 4 there would be no expansion into the Mono Trees expansion area;	Inconsistent. Inconsistency relates to the standards for <i>size of each area</i> (described in the second row of Table G) and the <i>management season</i> (described in the eighth row of Table G). The following discussion relates to information provided in cells with the	

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	impact any active and historic goshawk nesting territories.	second and eighth rows of Table G. Active Northern Goshawk nesting was documented at three nest sites within 1 mile west of the project area for four consecutive years from 2019 to 2022 indicating that a breeding pair of birds occupies a territory in the area, referred to as the Mill Creek territory by the Forest Service. A 200-acre nesting area, 400-acre fledging area, and 5,400-acre foraging area were delineated in suitable habitat surrounding the nest sites. These areas include some forest habitat in the proposed Mono Trees expansion area. Within the nesting area, a total of 4.47 acres of impacts are proposed. Within the fledging area, 128.96 acres would be impacted. Removal of trees within these areas would not be consistent with the standards and guidelines identified in Table G for active and historic goshawk nesting territories. Therefore, a	therefore, Alternative 3 and 4 would be consistent with the Northern Goshawk nesting territory standards and guidelines.		second and eighth rows of Table G. Active Northern Goshawk nesting was documented at three nest sites within 1 mile west of the project area for four consecutive years from 2019 to 2022 indicating that a breeding pair of birds occupies a territory in the area, referred to as the Mill Creek territory by the Forest Service. A 200-acre nesting area, 400-acre fledging area, and 5,400-acre foraging area were delineated in suitable habitat surrounding the nest sites. These areas include some forest habitat in the proposed Mono Trees expansion area. Within the nesting area, a total of 4.47 acres of impacts are proposed. Within the fledging area, 128.96 acres would be impacted. Removal of trees within these areas would not be consistent with the standards and guidelines identified in Table G for active and historic goshawk nesting territories. Therefore, a project specific Forest

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		project specific Forest Plan amendment would be needed for projects under Proposed Action. Refer to Appendix C – Forest Plan Amendments for more information on this Forest Plan amendment.			Plan amendment would be needed for projects under Alternative 5. Refer to Appendix C – Forest Plan Amendments for more information on this Forest Plan amendment.
Flammulated Owl Habitat					
Standards					
1. Do not allow timber or firewood harvest activities within a 30-acre area around all known flammulated owl active and historic nest sites.	Consistent. The No Action Alternative is a continuation of existing operations and management practices. Although Flammulated owl detections occurred within the project area, these existing practices would not impact any active or historic Flammulated Owl nest sites.	Inconsistent. Flammulated Owl detections occurred within the project area during the breeding season in 2019. Based on survey data, TNF biologists identified five 30-acre nesting areas within the Mono Trees, Colter, and Sacajawea terrain areas. A total of 46 acres within these nesting areas would be impacted by the Proposed Action and would include 11 acres of tree clearing and/or grading with the remaining 35 acres occurring as 40% tree thinning for ski glades. A project specific Forest Plan amendment would be required to exempt proposed projects under Alternatives 2 through 5	Inconsistent. CTNF biologists designated five 30-acre Flammulated Owl nesting territories within the project area based on Flammulated Owl detections during pre-project surveys in 2019. Four of these nesting areas are partially or fully within the existing SUP and would be impacted under Alternative 3. 45.7 acres of impacts are proposed in the nesting territories under Alternative 3 which includes grading and tree clearing in 10.7 acres, and 40% tree removal for ski glades in 35 acres. A project specific Forest Plan amendment would be required (refer to Appendix C – Forest	Inconsistent. Impacts to Flammulated Owl under Alternative 4 would be similar to those under Alternative 3. Refer to the Alternative 3 discussion for more information. A project specific Forest Plan amendment would still be required (refer to Appendix C – Forest Plan Amendments for more information).	Inconsistent. Impacts to Flammulated Owl under Alternative 5 would be similar to those under Proposed Action. Refer to the Proposed Action discussion for more information. A project specific Forest Plan amendment would still be required (refer to Appendix C – Forest Plan Amendments for more information).

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		<p>from impacting active or historic Flammulated Owl nest sites (refer to Appendix C – Forest Plan Amendments and the Wildlife BE for more information).</p> <p>Furthermore, various PDC as identified in Table 2.4-1. Project Design Criteria would be incorporated to help prevent individual mortality and protect nesting activity. If specific impacts to threatened, endangered, and Region 4 sensitive species and/or their habitats, including nests, are identified during project implementation, project operations in the immediate vicinity would be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts.</p>	Plan Amendments for more information).		
Boreal Owl Habitat					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Standards					
1. Do not allow timber or firewood harvest activities within a 30-acre area around all known boreal owl active and historic nest sites.	Consistent. Under the No Action Alternative, timber harvest would not occur within 30-acre areas around known boreal owl active and historic nest sites. Based on detection timing and call intensities one Boreal Owl territory is likely centered in the area at the base of Peaked Mountain; however, as discussed in the 2021 Peaked Mountain SIR, the area in which the Colter Lift has been constructed does not function as suitable nesting habitat for these species.	Inconsistent. Boreal Owl detections occurred within the project area in two separate areas that are likely to represent different nesting territories. Two 30-acre areas were established in these areas where nesting activity was most likely to occur. One of the 30-acre nesting areas is located within a proposed glade area in the northern portion of the Mono Trees expansion area and the other is located within the southwestern edge of the existing SUP. A total of 25.2 acres within these nesting areas would be impacted by the Proposed Action and would include 2.3 acres of grading and tree clearing and 22.9 acres of 40% tree thinning for ski glades. Therefore, a project specific Forest Plan amendment will be required in order for tree removal to occur within the two 30-acre areas (refer to Appendix C – Forest Plan	Inconsistent. Boreal Owl detections occurred within the project area during the breeding season in 2019 and based on survey data, TNF biologists identified two nesting areas in the proposed Mono Trees expansion area and the southwestern edge of the existing SUP boundary. Under Alternative 3, development is proposed within the existing SUP boundary and the South Bowl and Mono Trees areas would remain undeveloped. With no expansion into Mono Trees, only one of the 30-acre Boreal Owl nesting territories would be impacted by proposed projects where 1.1 acres of grading and tree clearing are proposed for a summer trail. Therefore, a project specific Forest Plan amendment would be required (refer to Appendix C – Forest Plan Amendments for more information).	Inconsistent. Impacts to Boreal Owls under Alternative 4 would be similar to those under Alternative 3. Refer to the Alternative 3 discussion for more information. A project specific Forest Plan amendment would still be required. Refer to Appendix C – Forest Plan Amendments for more information).	Inconsistent. Impacts to Boreal Owls under Alternative 5 would be similar to those under Proposed Action. Refer to Proposed Action for more discussion. A project specific Forest Plan amendment would be required (refer to Appendix C – Forest Plan Amendments for more information).

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		Amendments for more information).			
2. Maintain over 40 percent of the forested acres in late seral age classes within a 3,600-acre area around all known boreal owl nest sites.	<p>Consistent. The No Action Alternative and all action alternatives would be consistent with this standard. Boreal Owl detections occurred within the project area in two separate areas that are likely to represent different nesting territories. Two 30-acre areas were established in these areas where nesting activity was most likely to occur. A 3,600-acre home range was also established where over 40% of the forested late seral age class would be maintained even with proposed development impacts.</p> <p>Prior to development impacts, the 3,600-acre home range is comprised of 97% mature and late successional stage forest. Alternatives 2 and 5, which include the proposed Mono Trees expansion area, would directly impact 61 acres of late seral and potential old growth forest in the Boreal Owl home range or 3% of the late seral age class forest in the area. This would reduce the percentage of late-stage forest in the home range to 59%. 27-acres of these losses are in the Mono Trees expansion but forested habitat there is likely of higher value than habitat in the existing SUP because the area is currently undeveloped. 34 acres are in the existing SUP; therefore, under Alternatives 3 and 4, 1.5% of the late seral stage forest in the home range would be lost and 59.8% would remain. With proposed development impacts, well over 40% of the forest within the 3,600-acre home range would still be maintained as mature and late successional stage forest. Refer to the Wildlife BE for additional discussion of potential impacts to Boreal Owl.</p>				
Great Gray Owl Habitat					
Standards					
1. Do not allow timber or firewood harvest activities within a 20-acre area around all known great gray owl active and historic nest sites. Vegetation manipulation does not include tree planting.	<p>Consistent. The No Action Alternative and all action Alternatives would be consistent with both standards as no known Great Gray Owl nests occur within the project area. The nearest Great Gray Owl detection occurred during 2019 and 2020 survey efforts and was located 1.4 miles west of the project area. If specific impacts to threatened, endangered, and Region 4 sensitive species and/or their habitats, including nests, are identified during project implementation, project operations in the immediate vicinity would be suspended until the Forest Service Wildlife or Fish Biologist or Botanist are contacted. Project implementation may be adjusted, and timing restrictions may be applied, as determined by the Forest Service, to reduce those impacts. The species of interest include any USFWS TES species. Refer to the Wildlife BE for additional discussion of potential impacts to Great Gray Owl.</p>				
2. Maintain over 40 percent of the forested acres in late seral age classes within a 1,600-acre area around all known great gray owl nest sites.					
Guidelines					
3. Restrict the use of strychnine poison to control pocket gophers within a 1/2-mile buffer around all	Consistent. The No Action Alternative and all action Alternatives would be consistent with this guideline as the use of strychnine poison is not being proposed to control pocket gophers.				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
known active great gray owl nest sites.					
Trumpeter Swan Habitat					
Standards					
1. Maintain suitable trumpeter swan nesting habitat conditions including (but not limited to) the following lakes and ponds Boundary Pond, Swan Lake, Lily Pond, Hatchery Butte, Railroad Pond, Mesa Marsh, Bear Lake, Upper Goose Lake, Long Meadows, Thompson Hole, Twin Lakes, Chain Lakes, Widgit Lake, Rock Lake, Indian Lake, Putney Meadows, Unnamed Pond (Sec 19, T9N, R46E).	Consistent. No trumpeter swan nesting habitat exists within the existing and proposed GTR SUP area.				
3. No vegetation management will occur within 300 feet of the lake or pond shoreline unless necessary to improve riparian habitat conditions favorable for trumpeter swans. Management may occur after the swans have left the lake or pond.	Consistent. No trumpeter swan nesting habitat exists within the existing and proposed GTR SUP area.				
Guidelines					
2. Change livestock grazing through management or fencing when grazing is adversely affecting trumpeter swan use or productivity b. Reduction of conflicts between Forest Service and private landowner objectives, especially	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
when conflicts are adversely impacting National Forest System management.					
4. Maintain constant water levels, allow no drawdowns from May 1 to September 30 when not in conflict with preexisting water rights.	N/A				
5. Do not take any recreation management actions that would encourage dispersed recreation activity at these lakes and ponds. Close these areas to recreation activity if this activity is adversely affecting trumpeter swan use or productivity.	N/A				
6. Implement habitat improvement projects at these lakes and ponds, such as dredging to maintain proper water depths and aquatic vegetation control.	N/A				
<i>Harlequin Duck Habitat</i>					
Guidelines					
1. Avoid establishing new trails, new roads, or new recreation facilities within 300 feet (on each side) of any stream reach with documented harlequin duck breeding activity.	Consistent. No harlequin duck habitat occurs within the existing or proposed GTR SUP area.				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
FOREST USE AND OCCUPATION					
Standards					
1A. Road closures will be located and designed to effectively control motorized use.	Consistent. No road closures would be needed under the No Action Alternative.	Consistent. Under all Alternatives, road closures would be designed to effectively control motorized use in and around GTR.			
2A. The Open Road and Open Motorized Trail Route Density (OROMTRD) Standards prescribed for each prescription area do not restrict responses to emergency events to protect human life, property values and structures, and forest resources. Responses to emergency events include law enforcement, search and rescue, and fire suppression	Consistent. Under the No Action Alternative the OROMTRD Standards would still be implemented and not compromised.	Consistent. Under all Alternatives OROMTRD Standards would be followed, and specific PDC would be implemented to decrease congestion.			
2B. Prudent cross-country motorized access is allowed to implement projects consistent with prescription objectives, in all prescription areas except for grizzly bear core areas and designated wilderness. Administrative uses including but not limited to planned project work such as firewood harvest, timber sales, tree planting, prescribed burns, wildland survey or fish and wildlife habitat improvements on restricted roads, trails or areas will only be allowed under the following conditions.	Consistent. Motorized access to restricted roads or trails would not be required under the No Action Alternative.	<p>Consistent. Short-term cross-country motorized access would occur on designated routes during project implementation, which is inconsistent with the access standard for Management Prescription 4.2; however, following implementation, cross country motorized travel would end and management activities within the project area would be consistent with the access standards for Management Prescription 4.2. Temporary routes would be decommissioned following construction. Motorized vehicle access on a restricted road or trail or area would be allowed by permit under the following conditions when approved by the Forest Supervisor or District Ranger: a) Project work is one mile or 30-minute walk or greater b. Equipment is being used that is unreasonable to carry to the project work site. No cross-country travel is proposed within grizzly bear core areas or designated wilderness.</p> <p>Furthermore, motorized access to restricted roads or trails would not be required under all action Alternatives.</p>			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<p>1) Any motorized vehicle access on a restricted road or trail or in a restricted area will be for official administrative business only and must be approved by the District Ranger.</p> <p>2) When motorized vehicle access on a restricted road or trail or area is necessary, a sign will be posted while project work is being accomplished.</p> <p>3) Motorized vehicle access on a restricted road or trail or area will be allowed by permit under the following conditions when approved by the Forest Supervisor or District Ranger</p> <ul style="list-style-type: none"> a. Project work is one mile or 30 minutes walk or greater b. Equipment is being used that is unreasonable to carry to the project work site c. Contract inspectors working with contractors who have motorized equipment and vehicles which are necessary for the contract work <p>This direction (in item 2 B above) supersedes direction in access tables for individual prescriptions</p> <p>Needs for motorized cross-country administrative access will be presented and considered in</p>					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
analysis documents for proposals including, but not limited to prescribed burning, fish, and wildlife habitat improvement, timber sales, and personal use firewood harvest. The proposal will limit access to that reasonably needed to conduct the project. Prudent cross-country access to implement these projects may be allowed consistent with project-level NEPA decisions and prescription objectives in all prescription areas except for grizzly bear core areas and designated wilderness. This direction supersedes direction in access tables for individual prescriptions.					
<p>3. Figures appearing in the access tables for individual prescriptions represent direction for those prescription areas. If no figure appears refer to the direction in Table H at the end of this Appendix.</p> <p>The access density measurements TMARD and OROMTRD are defined in the Glossary. Access densities are based on open and restricted roads and trails.</p>	Consistent. The No Action Alternative would not alter accessibility within the existing GTR SUP area.	Consistent. All Alternatives do not follow the access table prescriptions for Management Prescription 4.2; however, access associated with the proposed projects are consistent with the exceptions detailed for Forest Use and Occupation Standard 2 above. Therefore, all Alternatives are consistent with this standard.			
4. The Forest travel plan was developed from individual prescription access tables and the	Consistent. The No Action Alternative would not alter accessibility	Consistent. All Alternatives would be consistent with application dates for the snow and snow-free seasons. All Alternatives do not follow the access table prescriptions for Management Prescription 4.2; however, access associated with the proposed projects are consistent with the exceptions detailed for Forest Use and			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<p>elk and deer winter range map. The following application dates were developed to respond to local resource and travel conditions. This direction supplements and is to be used in conjunction with the applicable direction in individual prescription access tables.</p> <p>a.) Snow-Free Season -The snow-free season direction takes effect yearly in the spring as local conditions become suitable to support wheeled vehicle traffic on roads and trails without damage. Where legally permitted, snowmachines may use designated roads and trails shown on the travel plan as open to motorized use. Cross-country snowmachine travel is allowed only where the snow-free season direction allows cross-country motorized travel after June 1 except in Prescription 5.1.4 (C).</p> <p>b.) Snow Season -The snow season direction takes effect yearly on Thanksgiving Day. Where legally permitted, snowmachine travel is allowed consistent with the travel plan map. Crosscountry snowmachine travel is permitted from Thanksgiving Day through June 1 except on the Palisades Ranger District which permits said usage from December 15 through June 1 and except in (inventoried)</p>	<p>within the existing GTR SUP area.</p>	<p>Occupation Standard 2 above. Therefore, all Alternatives are consistent with this standard.</p> <p>Refer to Forest Use and Occupation Standard 2 above.</p>			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
winter range as shown on Forest Plan Map #24 Cross-country snowmachine travel is allowed in Prescription area 5 1 4 (c) (Big Bend Ridge) from January 1 until April 30.					
Guidelines					
1B. Restrict or reclaim roads not needed for future management as determined in site-specific analysis, at the end of project use. Consider historic recreation use before closure.	Consistent. The No Action Alternative would not require roads as no proposed projects would occur.	Consistent. Under all Alternatives, numerous construction and temporary access roads would be decommissioned following specific PDC at the completion of the project. Refer to Chapter 2 for a discussion of existing mountain roads to be reclaimed and rehabilitated under each Alternative.			
RECREATION					
Winter Recreation					
Standards					
3. Snowmachine, snowshoes, and dogsleds are prohibited within designated groomed cross-country ski trails. Snowmachines and dogsleds are prohibited within designated cross-country ski areas	N/A				
4. Those areas mapped as winter range on the Revised Forest Plan elk and deer winter range map are closed to cross-country snowmachine travel. This direction supersedes direction in access tables for individual prescriptions.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guidelines					
1. Develop or provide trailhead facilities to match the desired trail capacity. These facilities may be public or private depending on location.	N/A				
2. Management of winter trails should be done where feasible by cooperative agreements with agencies and groups.	Consistent. Under the No Action Alternative management and existing operations of trails would continue to occur in under a cooperative agreement between the Forest Service and GTR and in accordance with Forest Service guidelines.	Consistent. Under all Alternatives, existing and future operations and management of trails would continue to occur under a cooperative agreement between the Forest Service and GTR and in accordance with Forest Service guidelines.			
Visual Quality					
Guidelines					
1. Following timber harvest in lodgepole pine, dispose of slash not needed to meet other resource objectives by a combination of piling, firewood gathering, and burning in areas up to 200-250 feet on either side of primary travelways, trails, and use areas which have high public concern for scenic quality as soon after harvest as possible.	N/A				
2. Following timber harvest in lodgepole pine, dispose of slash	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
not needed to meet other resource objectives by piling, firewood gathering, or burning for 150-200 feet on either side of roads, trails, and areas which have moderate public concern for scenic quality.					
OHV					
Standards					
4. No motorized vehicles over 50 inches wide are allowed on trails unless the trails are specifically designed for such vehicles	N/A				
Guidelines					
1. Discourage OHV use on slopes greater than 40 percent, except on designated routes and except for snowmachine use. Roads and trails, however, may cross slopes that exceed 40 percent.	Consistent. Under the No Action Alternative, OHV use would be discouraged on slopes greater than 40 percent, unless deemed necessary for Colter Lift implementation. Access routes have been designed to provide suitable access to project locations.	Consistent. Under all Alternatives, OHV use would be discouraged on slopes greater than 40 percent, unless deemed necessary for project implementation. Permanent and temporary access routes have been designed to provide suitable access to project locations.			
2. Areas with slopes of 25-40 percent may require travel restrictions if soil erosion factors warrant them.	N/A: Disturbance activities under the No Action Alternative and all Alternatives would primarily occur on soils with slight to moderate soil erosion factors. Therefore, travel restrictions would not be necessary.				
3. Restrict OHV use on identified areas of unstable soils (except for snowmobiles).	Consistent. Under the No Action Alternative, no	Consistent. Under all Alternatives, actions within Rick’s Basin, where high mobile sediments exist, would follow specific PDC and BMPs to mitigate the impacts from erosion.			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	OHV use would occur on unstable soils.				
Developed Facilities					
Standards					
5. Facilities that cannot be maintained to acceptable health and safety requirements will be closed until they can be brought up to standard.			N/A		
Guidelines					
1. Expand existing developed facilities to meet public needs.	Consistent. Under the No Action Alternative and all action Alternatives, developed facilities would be expanded to better meet public needs.				
2. Phase out low use developments that have high operation and maintenance (O&M) costs consistently exceeding \$1.50 per persons-at-one-time (PAOT) per day.			N/A		
3. Rehabilitate or provide heavy maintenance to facilities in Maintenance Class Two (MC 2) and Maintenance Class Three (MC 3) which cannot be brought up to Maintenance Class One (MC 1) through general maintenance.			N/A		
4. Developed facilities receiving heaviest use should receive first priority for maintenance.	Consistent. Under the No Action Alternative existing and future maintenance would continue to occur.	Consistent. Under all Alternatives maintenance and update of existing facilities would occur fulfilling the need to provide additional undeveloped, minimally maintained lift-served terrain and additional traditionally cleared alpine trails.			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<i>Dispersed Recreation Use</i>					
Standards					
1. Unless otherwise posted, motorized access is allowed for parking and dispersed camping within 300 feet of roads and trails which are open for motorized use. This direction supersedes direction in individual prescriptions, except no motorized use is permitted within designated wilderness.			N/A		
Guidelines					
2. Wilderness, recommended wilderness, and roadless areas dispersed campsites should be managed according to the Frissell Condition Classification System Actions (close, protect, or restore) should be taken to restore campsites that do not meet Class three or better.			N/A		
3. Dispersed campsite conditions on the remainder of the Forest should have no more than 15 percent of an activity area in a detrimentally disturbed soil condition, as described in the Dispersed Camping Protocol (Process Paper X).			N/A		
4. Low-development-level facilities should be provided at undeveloped concentrated-use			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
areas to prevent resource damage and protect public health and safety.					
Outfitter and Guides					
Guidelines					
1. Outfitter and guide facilities in dispersed nonwilderness areas should be built in less-frequented areas and be temporary. To prevent unacceptable resource damage or sanitation problems, facilities may be allowed at more heavily used locations. Only essential facilities should be provided at commercial outfitter camps in accordance with Greater Yellowstone Area Outfitter Policy camp standards.	N/A				
WILDERNESS					
Standards					
1. Outfitter/Guide - Allow no new outfitter camps (for hunters, anglers, etc.) until studies have been completed to determine site suitability and carrying capacity.	N/A				
3. VQO Manage for preservation.	Consistent. Under the No Action Alternative and all action Alternatives, no actions would occur that would impact the VQO of preservation in wilderness.				
Guidelines					
2. ROS Manage for a primitive to semi-primitive nonmotorized classification.	Consistent. Under the No Action Alternative and all action Alternatives, no actions would occur that would impact the ROS of primitive to semi-primitive nonmotorized classification in wilderness.				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
TRIBAL COORDINATION					
Standards					
1. Forest consultation procedures and inter government agreements with the tribes to guide future cooperative efforts will comply with the protocols set forth in the National Resource Book on American Indian and Alaska Native Relations Working Draft 1995 or its successor.	Consistent. Under the No Action Alternative and all action Alternatives, all Forest consultation procedures with the tribes are consistent with relevant direction from the National Resource Book on American Indian and Alaska Native Relations Working Draft 1995.				
PRODUCTION OF COMMODITY RESOURCES					
RANGE					
Upland Forage Utilization					
Guidelines					
1. Apply upland forage utilization levels to all allotments and/or management areas as shown in Table I at the end of this Appendix, unless determined otherwise through the interdisciplinary team process. These figures provide for maximum utilization levels regardless of which species of animal uses the forage or browse. These utilization guidelines apply to native and desirable nonnative vegetation as recorded at the end of the grazing period.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<i>Riparian Forage Utilization</i>					
Standards					
2A. Riparian Woody Plant Utilization: No more than 30 percent use on riparian woody plant species (current year's growth) is allowed. Thirty percent is the maximum allowed use as recorded at the end of the grazing period.			N/A		
<p>2B. Riparian Vegetation Stubble Height Standard (these apply to all grazing systems)</p> <p>1.) At the HGL, there will be at least four inches of stubble height remaining on key species at the end of the grazing period, unless determined otherwise through the interdisciplinary team Process. This standard applies to key species of native and desirable nonnative hydric vegetation</p> <p>2.) Away from the HGL, at least three inches of stubble will be left on the remainder of the key riparian species at the end of the grazing period, unless determined otherwise through the interdisciplinary team process</p>			N/A		
<i>Allotment Management Planning (AMP)</i>					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Standards					
3C2. All range improvements necessary for the conversion will be financed and constructed by the permittee. Construction will be in accordance with Forest Service standards.			N/A		
3C3. Do not convert from a cattle allotment to a sheep allotment within bighorn sheep habitat or in grizzly bear management prescriptions			N/A		
3D. Forest Service administrative site livestock pastures will comply with the forestwide standards and guidelines for forage utilization and riparian management.			N/A		
3F. Permittees are allowed motorized access to maintain facilities AMPs and Annual Operating Plans will include direction that motorized access must be less than two vehicles per week (This permitted access is not included in the OROMTRD).			N/A		
3G. In Idaho, follow the "Memorandum of Understanding Between the National Forests in Southern Idaho and the Idaho State Historic Preservation Officer Regarding Rangeland Management Activities" (February 1996). In Wyoming, follow the process			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
outlined in the National Programmatic Agreement, Option 2 (Criteria and standards for independent management) until a memorandum of agreement is developed between southern Idaho Forests and the Wyoming State Historic Preservation Office.					
3H. Monitor heritage resource sites on grazing allotments in Wyoming, and in Idaho consistent with the Heritage Resource Monitoring Plan for Southern Idaho Forests.			N/A		
Guidelines					
3A. Salt should be placed greater than 1/4 mile from water, or as far from water as practicable. Salting should be designed to avoid conflicts with aspen regeneration, conifer plantations, and system trails.			N/A		
3B. Allow no livestock grazing before seed set of the second growing season after prescribed or natural fires and rangeland planting or seeding.			N/A		
3C. Allow livestock conversions based only on resource capability (such as topography, water distribution, vegetation, wildlife, and recreation), and management objectives and not solely based on the desires of the permittee.			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
3C1. Conversions may be made in accordance with an AMP, and current range analysis, only after all necessary range improvements structures are in place.			N/A		
3E. All structural improvements directly required to implement the AMP will be installed and financed whereby the Forest Service provides approximately 50 percent of the cost and the permittee provides the remaining 50 percent.			N/A		
3I. Within subwatersheds occupied by native cutthroat trout or designated as vital to meeting recovery goals, identify areas where livestock grazing is causing fisheries habitat conditions to fall below or retard the rate of recovery toward the values described in the table, "Expected Values for Healthy Fish Habitat Conditions" in standards and guidelines for Fisheries and Other Aquatic Resources. Include specific remedial actions in the AMP or Annual Operating Plan Progress toward meeting these expected values should be monitored and grazing systems adjusted, as necessary.			N/A		
3J. All grazing allotments will be managed at FRES (Forest Range Environmental Study) management strategies A, B, C, or D with			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
exceptions as noted in individual prescriptions (1 1 6, 1 1 7, 1 1 8, 2 2, 2 4, 2 5, 4 2).					
TIMBER MANAGEMENT					
<i>Allowable Sale Quantity (ASQ)</i>					
Standards					
1B. ASQ will not exceed 80 million board feet (MMBF) for the plan decade.			N/A		
1C. ASQ will not exceed 80 million board feet for outyear decades until this Plan is revised or amended.			N/A		
1D. On suited lands within five-series prescriptions, roadless areas and areas with slopes between 40 and 60 percent are in a noninterchangeable component (NIC).			N/A		
Guidelines					
1A. Estimates of ASQ and long-term sustained yield timber supply capacity are themselves based on estimates of volume available on timbered acres scheduled for harvest. Total harvested acres for the decade may vary and will depend on site-specific project implementation to meet plan goals and objectives.			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
<i>Rotation Age Guideline</i>					
Guidelines					
2. The earliest rotation ages of each species group beginning at culmination of mean annual increment are included in Table J at the end of this Appendix.			N/A		
<i>Minimum Stocking Guideline</i>					
Guidelines					
3. The minimum stocking which should occur before an area can be certified as stocked is included in Table K at the end of this Appendix.			N/A		
PRODUCTION OF COMMODITY RESOURCES – TIMBER MANAGEMENT – SLASH TREATMENT					
Standards					
1. Slash treatment guidelines are included in Table L at the end of this Appendix.			N/A		
<i>Size of Harvest Units and Adjacent Leave Blocks/Strips</i>					
Standards					
1. Created Opening. A harvested area of commercial forest land will not be considered a created opening for silvicultural purposes when stocking surveys indicate that minimum stocking is achieved and at least seven feet high. When			N/A		

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
other resource management considerations (such as wildlife habitat, watershed needs, or visual requirements) prevail, a created opening will no longer be considered an opening when the vegetation in it meets a particular management objective stated in the applicable management prescription.					
Logging systems					
Guidelines					
1. Slopes 40 percent or less will normally be harvested using ground-based logging equipment (tractors, rubber-tired skidders, low ground pressure equipment, etc.). Slopes greater than 40 percent, but less than 60 percent, will normally be harvested using advanced logging systems like short span cable systems, longspan cable systems, or aerial systems.	Consistent. Under the No Action Alternative, slopes 40 percent or less would be harvested using ground-based logging equipment. Some timber removal may occur over snow. Slopes greater than 40 percent, but less than 60 percent, would be harvested using aerial systems.	Consistent. Under all action Alternatives timber removal would primarily be accomplished over-the-snow and utilizing the on-mountain road network. No skid roads would be constructed as timber would either be removed over the snow via snowcat, transported over the snow to a deck location accessible from the road network, piled and burned, or removed via helicopter. For projects that involve logging operations, ground skidding shall be avoided on slopes steeper than 40%. Low-impact machinery (e.g. a spider hoe or helicopter) may be necessary in areas such as South Bowl with steep terrain to assist with tree removal.			
2. Rutting in skid trails should not exceed six to eight inches in depth (wet condition) over more than ten percent of a designated skid trail system. No yarding operations should take place when ground conditions are wet enough that there is a risk of such rutting.	Consistent. Under the No Action Alternative, no skid roads would be constructed as timber would either be removed over the snow or via helicopter.	Consistent. Under all action Alternatives timber removal would primarily be accomplished over-the-snow and utilizing the on-mountain road network. No skid roads would be constructed as timber would either be removed over the snow via snowcat, transported over the snow to a deck location accessible from the road network, piled and burned, or removed via helicopter.			
Fuelwood					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Standards					
1. Allow permitted fuelwood gathering in designated areas only.	N/A				
Guidelines					
2. Select designated fuelwood areas that have an excess of dead and down woody material which is in excess of that required for ecological function, structure, and composition.	N/A				

Management Prescriptions

2.1.2 VISUAL QUALITY MAINTENANCE

Forest Use and Occupation

Standards					
1. Access standards are included in Table M at the end of this Appendix.	N/A	Inconsistent. A programmatic amendment to the Targhee National Forest Plan would be required to accommodate the proposed South Bowl and Mono Trees areas located outside of GTR's existing SUP boundary on land that is currently designated as management prescription 2.1.2 <i>Visual Quality Maintenance</i> . Therefore,	N/A	Inconsistent. A programmatic amendment to the Targhee National Forest Plan would be required to accommodate the proposed South Bowl areas located outside of GTR's existing SUP boundary on land that is currently designated as management prescription 2.1.2 <i>Visual Quality Maintenance</i> . Therefore, the proposed development	Inconsistent. A programmatic amendment to the Targhee National Forest Plan would be required to accommodate the proposed Mono Trees area located outside of GTR's existing SUP boundary on land that is currently designated as management prescription 2.1.2 <i>Visual Quality Maintenance</i> . Therefore, the proposed development

		the proposed development of this ski terrain would require that the Targhee National Forest Plan be amended to incorporate these two areas into the GTR SUP boundary and would result in the conversion of approximately 741 acres from management prescription 2.1.2 to management prescription 4.2 <i>Special Use Authorization Recreation Sites</i> .		of this ski terrain would require that the Targhee National Forest Plan be amended to incorporate the area into the GTR SUP boundary and would result in the conversion of approximately 266 acres from management prescription 2.1.2 to management prescription 4.2 <i>Special Use Authorization Recreation Sites</i> .	of this ski terrain would require that the Targhee National Forest Plan be amended to incorporate the areas into the GTR SUP boundary and would result in the conversion of approximately 475 acres from management prescription 2.1.2 to management prescription 4.2 <i>Special Use Authorization Recreation Sites</i> .
Timber					
Standards					
1. These areas are removed from the suitable timber base. They do not contribute to the ASQ.	N/A				
2.8.3 AQUATIC INFLUENCE ZONE					
Guidelines					
1. Boundary widths for the five water types apply until a site-specific analysis is completed. The slope distances specified for boundary widths in the five water types will vary by ecological subsection. The slope distances of boundary, widths, in feet, by ecological subsection are included in Table O at the end of this Appendix.	Consistent.	Consistent. Under all action Alternatives, project activities located within AIZs would utilize boundary width guidelines for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with the boundary width guidelines for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.			

ECOLOGICAL PROCESSES AND PATTERNS

Insects and Disease

Guidelines

1. Where catastrophic insect and disease damage results in degraded riparian conditions, unscheduled timber harvest (salvage and commercial fuelwood cutting) is allowed where needed to attain the goals of this management prescription providing other goals of this management prescription are not adversely affected.

N/A

Fires/Fuels

Standards

1. Prescribed fire activities on adjacent lands must be compatible with management prescription goals.

N/A

Guidelines

1. Avoid locating bases, camps, helibases, staging areas, helispots, hazardous material storage facilities, and other centers for incident activities within these lands. If the only suitable location for such activities is within this area, an exception may be granted following a review and recommendation by a resource advisor. The resource advisor will prescribe the location, use

Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.

Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.

conditions, and rehabilitation requirements.		
2. Avoid application of chemical retardant, foam, or additives in these areas. Exceptions may be warranted in situations where overriding safety concerns exist, or following a review and recommendation by a resource advisor, when an escape would cause more long-term damage.		N/A
3. Use minimum impact suppression methods.		N/A
PHYSICAL ELEMENTS		
<i>Lands</i>		
Guidelines		
1. Avoid locating utility corridors and their access roads in these lands whenever possible.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.
<i>Minerals/Geology</i>		
Standards		
1. Adequate reclamation plans, and bonds are required in mining plans of operation These bonds must cover the full costs of removing facilities, equipment, and materials, recontouring disturbed areas to near pre-mining topography, isolating and		N/A

neutralizing or removing toxic or potentially toxic materials, salvaging, and replacing topsoil, and preparing seedbeds and revegetating to meet management prescription goals		
2. Do not locate permanent structures or facilities within these lands.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this standard for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this standard for management prescription 2.8.3, implementation would be consistent with relevant standards under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.
3. Do not locate waste dumps, leaching pads, and other facilities within these lands where other alternatives are available. If no other alternative exists, ensure that safeguards are in place to prevent release or drainage of toxic or other hazardous materials onto these lands.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this standard for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this standard for management prescription 2.8.3, implementation would be consistent with relevant standards under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.
4. Do not allow debris, overburden, and other materials associated with mining activities to be placed within these lands if other alternatives are available. If no alternative is available, place them outside the active floodplain and outside the Stream Protection Zones defined by the state. In either case, place them in such a manner as to prevent their entry by erosion, high water, or other means into stream channels.		N/A

Guidelines		
1. Discourage mineral material extraction (subject to valid permitted rights, or where permitted by plans of operation).	N/A	
2. Plans of operation will be consistent to the fullest extent possible with management prescription goals.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2.
BIOLOGICAL ELEMENTS		
<i>Wildlife</i>		
Guidelines		
1. Strive to maintain dead and defective tree habitat at a level capable of supporting 100 percent potential populations of the management indicator species for primary cavity excavators.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2.
<i>Forest Use and Occupation</i>		
Standards		
1. Access standards are included in Table N at the end of this Appendix.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this standard for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this standard for management prescription 2.8.3, implementation would be consistent with relevant standards under management prescription 4.2.

Guidelines		
1. Containers holding more than five gallons of spare vehicle fuel should be stored outside the AIZ or stored in such a way as to prevent leakage into riparian areas. Vehicle refueling should be done in a way that avoids contamination of water bodies	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. PDC have been included in the action Alternatives to avoid activities within the AIZ boundary.
Roads and Trails		
Guidelines		
1. No new roads, trails, or landings will be constructed within these lands until appropriate standards for construction, maintenance, and operations are in place.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. PDC have been included in the action Alternatives to ensure that new road design minimizes impacts to soils, water quality, and riparian resources.
2. Improve, seasonally close, close, relocate and stabilize, or obliterate roads and trails that have been identified as posing a high risk of causing unnaturally high levels of sediment input or are known to be doing so. Action to be taken will be determined based on travel management needs, terrain, the need for the road or trail, the potential environmental impacts, and resource priorities.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3.	<p>Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Under all action Alternatives, GTR proposes a Mountain Roads Rehabilitation Program to eliminate steep and no longer necessary access roads, as well as construct new roads to bypass steep grades and improve mountain circulation and maintenance (refer to Figure 3). The overhaul of the mountain road network would allow GTR to reduce erosion and sedimentation and better maintain on-mountain infrastructure.</p> <p>Furthermore, all action Alternatives include the following PDC: To decommission unnecessary road segments, implement suitable measures to re-establish stable slope contours and surface and subsurface hydrologic pathways where necessary to the extent practicable to avoid or minimize adverse effects to soil, water quality, and riparian resources. These measures include:</p> <ul style="list-style-type: none"> • Removing drainage structures. • Recontouring and stabilizing cut slopes and fill material.

		<ul style="list-style-type: none"> Reshaping the channel and streambanks at crossing sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site. Restoring or replacing streambed materials to a particle size distribution suitable for the site. Restoring floodplain function.
3. Roads and trails or sections of them that have been identified as inhibiting riparian, wetland, or aquatic ecosystem processes and/or functions (e.g., plant community development, sediment transport, and stream channel development) will be improved, relocated, or obliterated. The decision to improve, relocate, or obliterate will be based on the potential environmental impact, the ecological condition of the riparian, wetland and aquatic resources affected, and the need for the road or trail.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	<p>Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Under all action Alternatives, GTR proposes a Mountain Roads Rehabilitation Program to eliminate steep and no longer necessary access roads, as well as construct new roads to bypass steep grades and improve mountain circulation and maintenance (refer to Figure 3). The overhaul of the mountain road network would allow GTR to reduce erosion and sedimentation and better maintain on-mountain infrastructure.</p> <p>Furthermore, all action Alternatives include the following PDC: To decommission unnecessary road segments, implement suitable measures to re-establish stable slope contours and surface and subsurface hydrologic pathways where necessary to the extent practicable to avoid or minimize adverse effects to soil, water quality, and riparian resources. These measures include:</p> <ul style="list-style-type: none"> Removing drainage structures. Recontouring and stabilizing cut slopes and fill material. Reshaping the channel and streambanks at crossing sites to pass expected flows without scouring or ponding, minimize potential for undercutting or slumping of streambanks, and maintain continuation of channel dimensions and longitudinal profile through the crossing site. Restoring or replacing streambed materials to a particle size distribution suitable for the site. Restoring floodplain function.
4. Culverts and stream crossings found to pose a risk to riparian, wetland or aquatic conditions will be improved to accommodate at least a 50-year flood, including associated bedload and debris.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2.
5. New stream crossings will be constructed and maintained to prevent diversion of streamflow out of the channel and down the	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not	Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In

road in case of failure. In locations found to have high potential for failure, the roadway will be hardened to further lessen the chance of roadway failure or severe erosion should the crossing overtop.	impact areas managed under management prescription 2.8.3	<p>instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Furthermore, the following PDC has been incorporated into the action alternatives: Design the road surface drainage system to intercept, collect, and remove water from the road surface and surrounding slopes in a manner that minimizes concentrated flow in ditches, culverts, and over fill slopes and road surfaces. Design considerations include:</p> <ul style="list-style-type: none"> • Using structural or nonstructural measures suitable to the road materials, road gradient, and expected traffic levels. • Using an interval between drainage features that is suitable for the road gradient, surface material, and climate. • Using suitable measures to avoid or minimize erosion of ditches.
6. Constructed temporary stream crossings, such as log and culvert installations, may be allowed if temporary crossings will be constructed and used in such a way as to minimize sediment input and to provide for fish passage. They will be maintained during use and removed and rehabilitated as soon as they are no longer needed.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	<p>Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Furthermore, the following PDC has been incorporated into the action alternatives: Roads should be located on stable, well-drained locations, as far from riparian areas and with as few crossings as possible. The permanent road system should be designed to be fully functional while avoiding unnecessary road segments. Temporary roads used for construction projects should be decommissioned properly.</p>
7. Construct, reconstruct, and maintain all road and trail crossings of streams which currently or historically bear fish to provide for fish passage. Exceptions are allowed where it is necessary to restrict fish movements in order to protect native or desirable nonnative fish populations.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	<p>Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Furthermore, the following PDC has been incorporated into the action alternatives: Oversized road culvert crossings are recommended to allow passage of flood flows, large bed rocks, and aquatic organisms.</p>
8. Conserve surfacing materials and protect riparian resources, by properly maintaining roads and avoiding side casting during road maintenance activities.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	<p>Consistent. Under all action Alternatives, project activities located within AIZs would be consistent with this guideline for management prescription 2.8.3 as feasible; however, as stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." In instances where it is not feasible to be consistent with this guideline for management prescription 2.8.3, implementation would be consistent with relevant guidelines under management prescription 4.2. Furthermore, the following PDC has been incorporated into the action alternatives: Construction practices and</p>

		operations should not introduce soils, debris, or other pollutants into streams, channels, swales, lakes, or wetlands. BMPs adequate for erosion and sediment control should be installed before ground-disturbing activities begin. If natural or biodegradable materials are not used and left on site, all non-natural and non-biodegradable materials should be removed at the end of construction.
<i>Recreation and Outfitter/Guide</i>		
Standards		
1. Recreational grazing must meet range standards for utilization of riparian vegetation.		N/A
2. Permitted stock holding, watering, and handling facilities within riparian vegetation (may not include the entire AIZ boundary) are allowed only if appropriate mitigation measures are implemented to ~reduce negative impacts.		N/A
Guidelines		
1. When dispersed recreation is found to result in soil disturbance in excess of 15 percent of an activity area, or alteration of natural stream channel morphology, address impacts through education, use limits, more intensive maintenance, facility modification, and /or closures.		N/A
2. ROS-Primitive to urban	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	Consistent. Under all action Alternatives, project activities within management prescription 2.8.3 would not result in a deviation from the ROS designation of primitive to urban.

3. VQO-Retention to modification	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	Consistent. As stated on page III-107 of the Targhee National Forest Plan, "In cases of overlap [with other management prescriptions], this prescription [2.8.3] prevails over all other prescriptions except the following:...Special Use Permit Recreation Sites (4.2)..." Management prescription 4.2 has a VQO of partial retention to maximum modification. Under all action Alternatives, project activities within management prescription 2.8.3 would not result in a deviation from the VQO designation of partial retention to maximum modification.
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PRODUCTION OF COMMODITY RESOURCES

Range

Standards

1. Proposed livestock watering facilities, corrals, and holding pastures within these lands are allowed only if appropriate mitigation measures are implemented to reduce negative impacts.	N/A
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Guidelines

1. Incorporate into AMPs, objectives for attainment of desired vegetation conditions for riparian plant community seral stage development and stream channel condition.	N/A
2. Existing livestock watering facilities, corrals, and holding pastures within these lands are allowed at permit issuance only if mitigation measures are implemented to reduce negative impacts.	N/A

Timber

Standards		
1. These lands are not included in the suitable timber base. They are not part of the ASQ.	N/A	
2. Burning of mechanized treated wood residues within the bankfull channel is prohibited.	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	Consistent. Under all action Alternatives, burn piles would be located outside the AIZ to protect hydrologic resources.
Guidelines		
1. Where needed to attain management prescription goals, design silvicultural prescriptions, and allow prescribed burning and stocking control, as well as the reestablishment and culturing of stands to attain desired vegetation characteristics.	NA – While silvicultural prescriptions and treatments occur at GTR, and would likely continue to occur into the future, they are not specifically proposed as a component of this project.	
2. Mechanized treatment of wood residue is minimized	Consistent. Under the No Action Alternative, Implementation of the Colter Lift would not impact areas managed under management prescription 2.8.3	Consistent. Mechanized treatment of wood residue would be minimized to the greatest extent possible under all alternatives.
3. Where catastrophic events such as fire or windstorms result in degraded riparian conditions, unscheduled timber harvest (salvage and commercial fuelwood cutting) may be selected as the most desirable management practice.	N/A	

4.2 SPECIAL USE PERMIT RECREATION SITES

ECOLOGICAL PROCESSES AND PATTERNS

Insects and Disease

Standards

1. Control insects and disease consistent with visual objectives.

N/A

Fire/Fuels

Standards

1. All wildfires that threaten these areas will be aggressively suppressed.

N/A

Guidelines

1. Prescribed fire generally will not apply here. It may be used, however, to achieve resource objectives.

N/A

2. Natural fuels will be reduced or otherwise treated so the potential fireline intensities will not exceed 100 BTU per second per foot on 90 percent of the days during the regular fire season (Burning Index < 40).

N/A

PHYSICAL ELEMENTS

Soil and Water

Guidelines

1. Use rehabilitation techniques that do not detract from the recreation opportunity.

Consistent.
Rehabilitation at GTR
would continue to be

Consistent

	done in a way that does not detract from recreation opportunities.	
2. Avoid new construction on unstable or highly erosive soils.	Under the No Action Alternative, the Colter Lift would be constructed on soils with moderate to high soil erosion rating and low to moderate mass instability potential; however, following implementation GTR would adhere to design criteria and best management practices to ensure that effects to soil would be minimized to the greatest extent possible.	Consistent. Under all action Alternatives, new construction would occur on soils with slight to moderate erosion hazard (K Factor). Additionally, erosion PDC such as avoiding areas that show signs of instability and authorization of a site erosion control plan would address slope stability standards and guidelines.
3. On new developments provide adequate vegetation filters to maintain and/or enhance riparian dependent resources.	Consistent. Under the No Action Alternative, mitigation measures, best management practices, and design criteria would be implemented to ensure riparian dependent resources are maintained or enhanced during the construction of Colter Lift.	Consistent. Under all action Alternatives, vegetative buffers would be maintained adjacent to intermittent or perennial drainages and wetlands, to the extent possible. Where avoidance of the vegetative buffer is not possible, disturbance would be minimized.
Lands		
Standards		
1. Continue existing recreation residence permits under specific subsection direction and the	N/A	

following conditions for specific areas a) Implement the Big Springs Summer Home Agreement b) New recreation residence tracts (summer homes) will not be established. No new residences will be permitted on vacant lots that are no longer leased unless necessary to replace lots damaged by landslides at the Hoffman site or to implement the Big Springs court order.	
2. Do not consider Buffalo, Moose Creek, and Big Springs summer home areas for land exchange.	N/A
Guidelines	
1. Corridor rights-of-way will avoid summer homes and group facilities.	N/A
Minerals/Geology	
Standards	
1. Mineral Material - No entry for mineral materials	N/A
Guidelines	
1. Locatable - Withdraw from mineral entry, or remove from mineral entry through the notation rule, subject to valid existing rights.	N/A
BIOLOGICAL ELEMENTS	
Wildlife	

Guidelines	
1. Projects that allow selected wildlife species to be more visible to recreation users may be allowed when compatible with special use permit recreation sites.	Consistent. Under the No Action Alternative and all action Alternatives, implementation of chairlifts and trail clearing would allow wildlife species to be more visible to recreation users. Chairlifts and ski trails are compatible uses under GTR's SUP.
2. Animal Damage Control - Animal damage control generally will not be done on these sites because of potential conflicts with recreation users and their pets, except for control of problem bears, beavers, porcupines, etc.	N/A
Plants	
Guidelines	
1. Projects or events that focus on the identification and/or uses of plants are allowed where compatible with special use permits and the activities do not degrade the vegetation at the facility.	N/A
Forest Use and Occupation	
Standards	
1. Access standards are outlined in Table P at the end of this Appendix.	Consistent. Short-term cross country motorized access would occur on designated routes during project implementation, which is inconsistent with the access standard for Management Prescription 4.2; however, following implementation, cross country motorized travel would end and management activities within the project area would be consistent with the access standards for Management Prescription 4.2. Temporary routes would be decommissioned following construction.
Recreation	

Guidelines	
1. Developed - Natural vegetation should be favored around facilities. However, mowing natural vegetation around facilities may be allowed.	Consistent. Under the No Action Alternative and all action Alternatives, GTR would be required to utilize onsite soil, sod, other native material, and native seed mixes to the greatest extent possible to create the most natural appearance and ensure the success of revegetation.
2. Trails may be allowed for the convenience of people using these sites.	Consistent. Under the No Action Alternative and all action Alternatives, trails would be constructed for recreational use by the public. Proposed trails may include ski, mountain biking, fat bike, Nordic, and hiking trails.
3. Short trails are allowed which provide access to facilities and opportunities for interpretation.	Consistent. Under the No Action Alternative and all action Alternatives, trails would be constructed for recreational use and access to facilities by the public. Proposed trails may include ski, mountain biking, fat bike, Nordic, and hiking trails.
4. ROS - Roaded natural to urban	Consistent. Under all action Alternatives, project activities within management prescription 4.2 would not result in a deviation from the ROS designation of roaded natural to urban.
5. VQO - Manage for a full range from partial retention to maximum modification. Facilities are often evident, but harmonize and blend with the natural setting.	Consistent. Under all action Alternatives, project activities within management prescription 4.2 would not result in a deviation from the VQO designation of partial retention to maximum modification. PDC have been incorporated into all action Alternatives to ensure that visual impacts are minimized or avoided.

PRODUCTION OF COMMODITY RESOURCES

Range

Guidelines	
1. Unless grazing activities are needed to meet recreation objectives, or unless authorized by special use or grazing permit, grazing of recreation stock and other livestock will not be allowed in special use recreation sites.	N/A
2. Grazing activities may be allowed in and around facilities designed for livestock use.	N/A

Timber	
Standards	
1. Developed recreation sites are removed from the suitable timber base. These lands do not contribute to the ASQ.	N/A
Guidelines	
1. All vegetation treatment options are available, but only as required to meet specific recreation objectives.	N/A
2. Stipulate removal of unsafe and/or dead trees in the special use permit. Native species may be planted to provide cover when naturally-occurring vegetation is inadequate.	Consistent. Under the No Action Alternative and all action Alternatives, hazard tree removal would continue to occur as part of GTR's summer operating plan. Additionally, disturbed areas would be revegetated with a native seed mixture using a variety of native seed grasses, wildflowers and forbs.

Teton Range Subsection (M331Db)

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Recreation					
Guidelines					
1. Manage the development of the Grand Targhee Ski and Summer Resort within the intent of the 1994 Master Development Plan Final Environmental Impact Statement and according to the Master Plan approved April, 1995.	All existing and proposed projects are consistent with GTR's accepted MDP and NEPA approvals that have occurred subsequent to the 1994 Master Development Plan Final Environmental Impact Statement.				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Wilderness					
Guidelines					
1. Implement the Jedediah Smith Wilderness Fire Management Plan.	N/A	N/A	N/A	N/A	N/A
Range					
Standards					
1. Domestic sheep grazing within the grizzly bear recovery area will be managed according to Management Situation guidelines.	The guidelines and standards pertain to the management and phasing out of domestic sheep grazing allotments and are not applicable to the proposed projects. Domestic sheep grazing allotments have been effectively phased out from the Teton Range Subsection, reducing the threat of disease to bighorn sheep in the region.				
2. To better manage grizzly bear and big horn sheep habitat, all sheep allotments in the Teton Range Subsection on the Teton Basin Ranger District will be phased out on an opportunity basis (Process Papers L and N). These allotments are the Moose Creek, Canyon Badlands, Dry Basin, Badger Twin, and Green Mountain S&G allotments. Opportunities to vacate an allotment include such event as nonuse violations, term permit waivers where the permit is waived back to the government, resource protection, or permit actions resulting in cancellation of the permit. If opportunities do not arise, then efforts will be made to relocate or accommodate sheep to other areas. Vacated allotments in these areas will be made available as					

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
needed to resolve conflicts between grizzly bears and domestic sheep in other sheep allotments in Situation 2 habitat.					
3. When all sheep allotments in the portion of the subsection within the grizzly bear recovery area have been vacated, they will be closed. Likewise, when all sheep allotments in bighorn sheep habitat have been vacated, they will be closed. The intent of not closing these individual allotments as they become vacated is to provide an opportunity to minimize conflicts between domestic sheep and bighorn sheep or grizzly bears.					
4. The range direction in the Revised Forest Plan for the Targhee National Forest applies to the grazing activities (allotment/permit administration, forage, utilization direction, AMP development, etc.) for that portion of the Moose Creek S&G allotment on the Bridger-Teton National Forest.					
NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION					
ALL MANAGEMENT PRACTICES AND ACTIVITIES (ALL): THE FOLLOWING STANDARDS, AND GUIDELINES APPLY TO ALL MANAGEMENT PROJECTS IN LYNX HABITAT WITHIN LAUS IN OCCUPIED HABITAT.					
Standard ALL S1					
New or expanded permanent development and vegetation management projects must maintain	Consistent. The No Action Alternative would not create	Consistent. Under Alternatives 2 & 5, impacts to lynx habitat would each affect 0.5% of suitable habitat within the Teton Creek LAU, and less than 0.01% in the Badger Creek LAU. This impact would be minimal at the scale of either LAU, because snowshoe hare abundance is currently low in the impacted areas, thus			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
habitat connectivity in an LAU and/or linkage area.	additional habitat disturbance and would therefore maintain habitat connectivity.	lynx most likely do not use these areas for forage under current conditions. Rather they are most likely to use these portions of the analysis area for travel to more suitable forage and/or denning areas. Lynx would be expected to continue to travel through these areas at night, outside of winter operational hours, during the winter. There is still abundant suitable lynx habitat present to the west of the new SUP boundary to provide connectivity within or between both LAUs. Under Alternatives 3 & 4, 0.05% of lynx habitat would be impacted in Teton Creek LAU, and less than 0.01% in Badger Creek.			
Guideline ALL G1					
Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forest highways across federal land. Methods could include fencing, underpasses, or overpasses.	N/A				
Standard LAU S1					
Changes in LAU boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.	N/A				
Human Use Projects (HU): <i>The following objectives and guidelines apply to human use projects, such as special uses (other than grazing), recreation management, roads, highways, and mineral and energy development, in lynx habitat in lynx analysis units (LAUs) in occupied habitat, subject to valid existing rights. They do not apply to vegetation management projects or grazing projects directly. They do not apply to linkage areas.</i>					
Guideline HU G1					
When developing or expanding ski areas, provisions should be made for adequately sized inter-trail islands that include coarse woody debris, so winter snowshoe hare habitat is maintained.	Consistent. The No Action Alternative would not develop or expand the ski area.	Consistent. There have been no specific surveys conducted to determine abundance of snowshoe hares within or adjacent to GTR. However, presence/absence surveys for snowshoe hares were conducted in the Mono Trees area during 2019. With a few exceptions on the extreme southern periphery of the Mono Trees, evidence of hare presence was absent, as there is low horizontal cover throughout Mono Trees. Cover within South Bowl stands providing snowshoe hare, and thus lynx habitat, is similar to that found in the Mono Trees and hares are not expected to be present in large numbers, if at all, in this area as well. Within the current operational boundary, tree stands are skied on a regular basis, which has been likely to have reduced the presence of snowshoe hares. The Proposed Action would not decrease the presence of coarse woody debris in inter-trail islands or inter-glade islands within the existing SUP boundary and would not significantly decrease hare habitat effectiveness in the Mono Trees or South Bowl. Hare habitat in both these areas is			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		currently poor and would continue to be poor following the development of these two areas. Therefore, under all Action Alternatives, the proposed projects are consistent with this guideline.			
Guideline HU G2					
When developing or expanding ski areas, lynx foraging habitat should be provided consistent with the ski area’s operational needs, especially where lynx habitat occurs as narrow bands of coniferous forest across mountain slopes.	Consistent. The No Action Alternative would not develop or expand the ski area.	Consistent. Under Alternatives 2 & 5, 0.5% of lynx habitat in the Teton Creek LAU would be converted to non-habitat, and less than 0.01% within Badger Creek LAU. However, the proposed projects are consistent with GTR’s operational needs, as described in their 2018 MDP. The ski area’s operational needs supersede the lynx foraging habitat provision of this guideline (USDA Forest Service 2009). Furthermore, it is unlikely that lynx forage exists within the existing SUP due to decreased snowshoe hare habitat effectiveness, or within South Bowl or Mono Trees due to poor hare habitat. Therefore, because lynx foraging habitat effectiveness is currently diminished as a result of ski area development and poor habitat quality (low horizontal cover), and because evidence exists that lynx avoid the area within the operational boundary of ski areas during the winter, and because GTR’s operational needs supersede the lynx habitat provisions of this guideline, all Action Alternatives are consistent with this guideline.			
Guideline HU G3					
Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat.	Consistent. The No Action Alternative would not develop or expand the ski area.	Consistent. As described under the response to Standard ALL S1, projects under the Proposed Action would maintain habitat connectivity within the Teton Creek LAU and between this and other LAUs. The discussions above for Guidelines HU G1 and HU G2 are also relevant to this guideline. Lynx habitat connectivity would be maintained within the Teton Creek and Badger Creek LAUs, facilitating daily, exploratory, and dispersal movements. The effectiveness of snowshoe hare habitat is currently limited within the existing SUP (per USDI-FWS 2013) and would continue to be limited. Furthermore, foraging opportunities and habitat effectiveness are very poor under current conditions within the Mono Trees and South Bowl expansion areas. Thus, the projects proposed under all Action Alternatives would not further impact lynx movements and would maintain the effectiveness of lynx habitat within the existing SUP as it currently exists. Therefore, under all Action Alternatives, the proposed projects are consistent with this guideline.			
Guideline HU G4					
For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guideline HU G5					
For mineral and energy development sites and facilities that are closed, a reclamation plan that restores 40 lynx habitat should be developed.	N/A				
Guideline HU G6					
Methods to avoid or reduce effects on lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases inhuman activity or development.	N/A				
Guideline HU G7					
New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity. New permanent roads and trails should be situated away from forested stringers.	Consistent. No new road development would occur.	Consistent. No new road development would occur under all of the Action Alternatives in areas important for lynx habitat connectivity. Refer to the Wildlife BA for a discussion of lynx habitat connectivity.			
Guideline HU G8					
Cutting brush along low-speed, low-traffic-volume roads should be done to the minimum level necessary to provide for public safety.	N/A				

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Guideline HU G9					
On new roads built for projects, public motorized use should be restricted. Effective closures should be provided in road designs. When the project is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives.	N/A				
Guideline Hu G10					
When developing or expanding ski areas and trails, consider locating access roads and lift termini to maintain and provide lynx security habitat, if it has been identified as a need.	Consistent. Under the No Action Alternative, no new access roads or lift termini would be developed.	Consistent. Under Alternatives 2 & 5, 0.5% of lynx habitat in the Teton Creek LAU would be converted to non-habitat, and less than 0.01% within Badger Creek LAU. Under Alternatives 3 & 4, 0.05% of lynx habitat would be impacted in Teton Creek LAU, and less than 0.01% in Badger Creek. However, as described for Standard ALL SI and Guidelines HU G1-3, lynx avoid the area within the existing SUP of ski areas during the winter. The proposed Mono Trees and South Bowl expansions would be established in areas that currently provide very little security habitat due to poor horizontal cover. Therefore, the proposed activities under all Action Alternatives are consistent with this guideline.			
Guideline HU G11					
Designated over-the-snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction, unless designation serves to consolidate use and improve lynx habitat. This may be calculated on an LAU basis, or on a combination of immediately adjacent LAUs. This guideline does not apply inside permitted ski area boundaries, to winter logging, to rerouting trails for public safety, to accessing	Consistent. Under the No Action Alternative, no new snow compaction would occur	Consistent. Due to the presence of very little security habitat due to poor horizontal cover within the Mono Trees, South Bowl, and low habitat quality of the existing SUP all Action Alternatives would not expand existing snow compacted areas.			

	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
private inholdings, or to access regulated by Guideline HU G12.					
Guideline HU G12					
Winter access for non-recreation special uses and mineral and energy exploration and development, should be limited to designated routes or designated over-the snow routes.	N/A				
Linkage Areas (Link): <i>The following objective, standard, and guidelines apply to all projects within linkage areas in occupied habitat, subject to valid existing rights.</i>					
Standard LINK S1					
When highway or forest highway construction or reconstruction is proposed in linkage areas, identify potential highway crossings.	N/A				
Guideline LINK G1					
NFS lands should be retained in public ownership.	Consistent. The No Action Alternative and all Action Alternatives would retain NFS lands in public ownership.				
Guideline LINK G2					
Livestock grazing in shrub-steppe habitats should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes.	N/A				

Supporting Tables

Table A.

Woody residue minimum requirement (tons/acre)	Forest Habitat Type
3-5	Limber pine/curleaf mountain mahogany Douglas-fir/mountain snowberry Douglas-Fir/common juniper Lodgepole pine/heartleaf arnica
5-10	Douglas-fir/ninebark Alpine Fir/pine grass Douglas-fir/mountain maple Alpine fir/heart leaf arnica Douglas-fir/blue huckleberry Whitebark pine/ross sedge Douglas-fir/grouse whortleberry Lodgepole pine/blue huckleberry Douglas-fir/common snowberry Lodgepole pine/grouse whortleberry Douglas-fir/white spirea Lodgepole pine/white spirea Douglas-fir/pine grass Lodgepole pine/pine grass Alpine fir/white spirea Lodgepole pine/elk sedge
10-15	Douglas-fir/mountain sweetroot Alpine fie/mountain arnica Engelman spruce/soft leaved sedge Alpine fir/common snowberry Alpine fir/ninebark Alpine fir/western meadow-rue

	Alpine fir/blue huckleberry Alpine fir/Oregon grape Alpine fir/grouse whortleberry
15-20	Engelman spruce/sweet-scented bedstraw Alpine fir/baneberry Alpine fir/mountain sweet root

Table B.

For Fisheries and Other Aquatic Resources guidelines 3, 4, and 5, refer to the following discussion and Table - The following table describes expected values for specific habitat features which are reflective of good fisheries habitat conditions and are also indicators of ecosystem health. It is intended to guide management of native cutthroat trout habitats. Although individual habitat features would be measured at the stream reach scale, the criteria for meeting the expected values appl at the watershed scale, generally for third- to sixth-order streams. These expected values are based on the best available information including INFISH. They are intended as a starting point and can be refined later, based on field analysis or literature review, to better reflect conditions that are attainable in a particular watershed or stream reach.

EXPECTED VALUES FOR HEALTHY NATIVE FISH HABITAT CONDITIONS AT THE WATERSHED SCALE	
Habitat Feature	Expected Value
Pool Frequency (all systems)	At least 1 pool per length of stream equal to 5-7 times the channel width
Water Temperature	Within spawning habitats 13 C or less with a maximum daily average no greater than 9 C 1/ Within adult holding habitat 16 C with a maximum daily average no greater than 12 C
Large Woody Debris (forested systems)	> 20 pieces per mile 2/
Bank Stability (nonforested systems)	> 80 percent
Lower Bank Angle (nonforested systems)	> 75 percent of banks with < 90 degree angle
Width/Depth Ratio (all systems)	Must be suitable for the Rosgen type of the given stream reach 3/
<p>1/ This criterion applies to the period of time from spawning to emergence. In lieu of site-specific information, use March 1 to September 15</p> <p>2/ Criteria must meet R1/R4 stream inventory procedures</p> <p>3/ Rosgentype refers to a stream classification system which categorizes streams based on entrenchment, gradient, width to depth ratio, sinuosity, and channel materials</p>	

Table C.

Late Seral (successional) Stages			
Forest Type	Age	Trees/Acre	DBH (in)
Lodgepole Pine	100+	40+	9+
Douglas Fir	140+	25+	14+

Mixed Conifer	100+	40+	12+
Spruce/Fir	110+	20+	10+
Aspen	60+	20+	10+
Cottonwood	50+	-	-

Table D. Snag requirements for 100 percent biological potential for woodpecker populations

Species	Range in Snag DBH (inches)	Range in Snag Height (feet)	No. of Snags per 100 Forested Acres for 100 Percent Biological Potential			
			Aspen	Cottonwood	Doug-fir Spruce/Fir	Lodgepole
Lewis's Woodpecker	12 to 27	5 to 170	101	101	101	NA
Yellow-bellied Sapsucker	9 to 47	15+	150	150	150	150
Williamson's Sapsucker	12 to 37	15+	NA	NA	150	150
Downy Woodpecker	6 to 14	6 to 50	300	300	300	300
Hairy Woodpecker	9 to 29	15+	180	180	180	180
Three-toed Woodpecker	7 to 19	15+	59	NA	59	59
Black-backed Woodpecker	8 to 17	6+	NA	NA	59	59
Northern Flicker	10 to 51	6+	38	38	38	38
Total Hard Snags per 100 acres			828	769	1037	936

NA indicates the species does not use this forest type

Table E. Snag requirements for maintaining various percentages of biological potential for woodpecker populations (refer to Table D for snag dbh, snag height, and individual species requirements)

Percent of Biological Potential	Number of Hard Snags per 100 Forested Acres			
	Aspen	Cottonwood	Doug-fir and Spruce/Fir	Lodgepole
100	828	769	1037	936
80	662	615	830	749
60	497	461	622	562
40	331	308	415	374
20	166	154	207	187

Table F.

Percent of Biological Potential	Number of Live Trees per Forested Acre				
	>= 10 in dbh	>= 7.0 – 9.9 in dbh	>= 5.0 – 6.9 in dbh	< 5.0 in dbh	Total Tree/Acre
100	8	5	5	7	25
80	6	4	4	6	20
60	5	3	3	4	15
40	3	2	2	3	10
20	2	1	1	1	5

Table G.

Management standards and guidelines for all forest types within active and historic goshawk nesting territories follow

Attribute	Nest Area	Post-Fledging Family Area	Foraging Area
Number of areas (S)	1	1	1
Size of each area (acres)(S)	≥ 200 acres	≥ 400	$\geq 5,400$
Size-Class Distribution for forested acres (%) (G)			
nonstocked seedling	0	≤ 20	≤ 20
sapling	0	≤ 20	≤ 20
pole	0	≤ 20	≤ 20
mature/old growth 1/	100	≥ 40	≥ 40
Rotation age (years) (G)	--	60 to 240	60 to 240
Maximum created opening (acres) (G)	0	≤ 40	≤ 40
Snags and Reserve Trees 2/ (G)	$\geq 60\%$ unless specified higher in prescription	$\geq 60\%$ unless specified higher in prescription	$\geq 60\%$ unless specified higher in prescription
Downed logs (average/acre) (G)	Forestwide S&Gs	Forestwide S&Gs	Forestwide S&Gs
Management Season (S)	Oct-Feb	Oct-Feb	Year-long
Thinning (G)	Non-uniform 3/	Non-uniform	by silvicultural prescription
Open Road Density 4/ (G)	No new system roads	No new system roads	\leq Management Rx Density
1/ Mature and old growth canopy closure for nest sites and post-fledging family areas should range between 75-100 percent (G) 2/ Refer to previous section on snag/cavity nesting habitat for explanation of biological potential 3/ Maximize diversity of structure 4/ Open roads in goshawk territories will be given priority for closure to meet management prescription road density standards. First priority will be to close roads in nest areas, second priority in post-fledging family areas, third priority in foraging areas. Where possible, open road density should be zero in the nest areas and the post-fledging family areas			

Table H.

	Henrys Lake BMU Subunit 1	Henrys Lake BMU Subunit 2	Plateau BMU	Bechler-Teton BMU
TMARD	1.0 MI/SQ MI	1	1	1
OROMTRD)	0.6 MI/SQ MI	0.6	0.6	0.6
Henrys Lake 1 - The Targhee National Forest portion of the Henrys Lake 1 subunit, excluding Management Situation 3 (MS3) habitat Henrys Lake 2 - The Targhee NF portion of the Henrys Lake 2 subunit Plateau BMU - The Targhee NF portion of this Bear Management Unit (BMU), excluding MS3 habitat Bechler/Teton BMU - The Targhee NF portion of this BMU				

Table I.

Table 1 Upland Rangeland Ecosystems - Percent Forage Utilization of Current Years Growth 1/					
	Season-long Grazing			Rotation Grazing	
	Unsatisfactory Range Condition	Satisfactory Range Condition		Unsatisfactory Range Condition	Satisfactory Range Condition
Grasses and Herbaceous Species	35%	45%		45%	55%
Shrubs	25%	35%		35%	35%
1/ The figures shown represent the best estimate of acceptable use levels which will provide for maintenance or improvement of these ecosystems. They shall be used as maximum use levels unless there is site-specific information to show that these levels are incorrect. Percent use is based on a dry weight percentage.					

Table J.

Species	Earliest Rotation Age (years)
Douglas-fir	100
Mixed Conifer 1/	80
Spruce-fir	100
Aspen	60
1/ Includes both MX (DF/LP) and MX3 (DF/LP with ES/AF)	

Table K.

Species	Minimum Stocking	Percent of Area Meeting Minimum Stocking
Lodgepole Pine	170	70
Douglas-fir	140	70
Mixed Conifer 2/	200	70
Spruce-fir	200	70
Aspen	300	70
1/ Aspen counts toward stocking		
2/ Includes both MX (DF/LP) and MX3 (DF/LP with ES/AF)		

Table L.

SLASH TREATMENT FOR FUELS < 3 INCHES IN DIAMETER (G)		
redicted and existing fuel loading under 3 inches diameter 1/	Minimum Treatment 2/	Maximum Fuel Patch size
Under 5 Tons/Acre	No treatment necessary for fire hazard reduction	160 ac under 40% slope 100 ac over 40% slope
to 10 Tons/Acre	Lop or crush to Regional Lopping Specifications	80 ac \leq 40% 40 ac > 40%
11 - 25 Tons/Acre	Alternatives	
	1 Reduce single entry loading to 10 tons/ac or less by multiple entry thinnings Follow lopping stds above according to loading	Single entry loading \leq 5 Ton/Ac , use above stds for < 5 tons Loading 5-10 use above std for 5-10 T/Ac
	2 Reduce slash < 3 in to \leq 5 tons per ac by burning or chipping	160 Ac < 40% 100 Ac > 40%
	3 Reduce loading of lopped or crushed fuel < 3 in to 5 - 10 ton per acre by burning or chipping	80 Ac < 40% 40 Ac > 40%
	4 Rehabilitate by piling, burning, and reforestation	160 Ac < 40% 100 Ac > 40%
	5 No treatment	N/A
1/ When down woody fuels constitute 30% or more of the total loading under 3 inches, the values in this column may be increased by 3 tons per acre 2/ Make sure mechanical treatments meet forestwide soils standards		

Table M.

Season	Type of Access	Cross-Country Travel	Road and Trail Travel 1/
Snow free Seasons	Pedestrian	Yes	Yes
	Horse/Pack Stock	Yes	Yes
	MtnBike/Mechanized	Yes	Yes
Snow free Seasons	Motorized, <50" wide	No	Yes
	Motorized, >50" wide	No	Yes
	OROMTRD 3/	N/A	2/
Snow Seasons	Winter Nonmotorized	Yes	Yes
	Snowmachine	Yes	Yes
1/ individual roads and trails are designated open or closed in the Forest Plan Travel Maps			
2/ OROMTRD = Open road and open motorized trail mute density does not apply to this prescription area			

Table N.

Season	Type of Access	Cross-Country Travel 2/	Road and Trail Travel 1/
Snow free Seasons	Pedestrian	Yes	Yes
	Horse/Pack Stock	Yes	Yes
	Mtn Bike/Mechanized	Yes	Yes
Snow free Seasons	Motonized, <50" wide	No	Yes
	Motonized, >50" wide	No	Yes
	OROMTRD 3/	N/A	3/
Snow Seasons 4/	Winter Nonmotonized	Yes	Yes
	Snowmachine	Yes	Yes
<p>1/ Individual roads and trails are designated open or closed in the Forest Plan Travel Maps</p> <p>2/ When cross-country travel is found to result in soil displacement in excess of 15 percent of an activity area, or alternation of natural stream channel morphology, reduce impacts through education, use limits, more intensive maintenance, facility modification, and/or closures</p> <p>3/ OROMTRD = Open road and open motonized trail route density includes all open roads and open motorized trails. The acres in this prescription area and the OROMTRD will be included in the calculations with the acres and OROMTRD in adjacent upland prescription areas (See Roads in Glossary for more information)</p> <p>4/ Within grizzly bear BMUs, site-specific restrictions on winter recreation activity (such as area closures, timing restrictions, etc.) will be imposed to resolve human-grizzly bear conflicts</p>			

Table O.

BOUNDARY WIDTHS OF WATER TYPES, BY SUBSECTIONS

Water Type			
	3,4	2	1,5,6,7
Fish-bearing Stream Reaches 1/	150	200	300
Perennial Nonfish-bearing Stream Reaches 1/	75	75	150
Lakes 2/	150	200	300
Reservoirs, Ponds, Wetlands Greater Than One Acre 3/	75	75	150
Intermittent Streams, Wetlands Less Than One Acre 4/	75	75	100
<p>1/ The boundary width is the slope distance on both sides of the stream, in feet, measured from the edge of the stream, or the area from the edge of the active stream channel to the outer edges of the riparian vegetation, whichever is greater</p> <p>2/ The boundary width is the slope distance specified, in feet, measured from the high water mark of the lake, or the area from the high mark of the lake to the outer edge of the riparian vegetation or seasonally saturated soil, whichever is greater</p> <p>3/ The boundary width is the slope distance specified, in feet, measured from the edge of the body of water (edge is defined as the maximum pool elevation of the water body), or the wetland area to the outer edges of the riparian vegetation, whichever is greater</p> <p>4/ The boundary width is the slope distance on both sides of the intermittent stream, in feet, measured from the edge of the stream, or the wetland area to the outer edges of the riparian vegetation, whichever is greater</p>			

Table P.

Season	Type of Access	Cross-country Travel	Road and Trail Travel 1/
Snow free Seasons	Pedestrian Horse/Pack Stock Mtn Bike/Mechanized	Yes No 2/ No	Yes Yes Yes
Snow free Seasons	Motorized, <50" wide Motorized, >50" wide OROMTRD 4/	No No N/A	Yes 3/ Yes 3/ not applicable
Snow Seasons	Winter Nonmotorized Snowmachine	Yes Yes 5/	Yes Yes 5/

Appendix C. Forest Plan Amendments

Introduction

The National Forest Management Act (NFMA) requires that authorized projects on National Forest System (NFS) lands, including third-party proposals subject to permits, be consistent with Forest Plan direction. The Caribou Targhee National Forest (CTNF) took into consideration consistency of the Proposed Action with the 1997 Revised Targhee National Forest Land and Resource Management Plan (1997 Forest Plan) desired conditions, goals, objectives, standards, and guidelines (refer to Appendix B – Forest Plan Consistency Analysis for more information). Furthermore, as described under the NFMA and its implementing regulations at 36 CFR 219 (2012 Planning Rule), a Forest Plan may be amended at any time. Plan amendments may be broad or narrow, depending on the need for the change. The Forest Service has the discretion to determine whether and how to amend the 1997 Forest Plan and to determine the scope and scale of any amendment.

Per the 1997 Forest Plan management direction, a standard is a binding limitation placed on management actions and must be within the authority and ability of the Forest Service to enforce. The 1997 Forest Plan clarifies that a project or action that varies from the relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the standard (1997 Forest Plan III-2). The 1997 Forest Plan defines guidelines as “a preferred or advisable course of action generally expected to be carried out.” Deviation from compliance does not require a Forest Plan amendment but does require rationale for deviation which must be documented in the project decision document. Additional information on the consideration of 1997 Forest Plan consistency, including standards and guidelines, is contained in the project file and Appendix B – Forest Plan Consistency Analysis. Two different Forest Plan amendments would be necessary to implement the various Action Alternatives: a programmatic amendment and a project specific amendment. The following sections describe the Forest Plan amendments necessary to implement the various Action Alternatives analyzed in the EIS and the regulations that apply to these Forest Plan amendments.

The Plan Amendment Process (§ 219.7(c))

When the Notice of Intent for this project was published in the Federal Register (8/26/2020), only one Forest Plan amendment was known to be needed for this project, the amendment of the management prescriptions. The other four Forest Plan amendments were not known to be needed at the time the Notice of Intent was published; the need for the amendments became apparent during the analysis process. Therefore, the effects of these project-specific amendments are analyzed and disclosed in conjunction with the GTR MDP Projects DEIS. The adjoined analysis will be available for public comment and objection periods following the guidelines set forth in 36 CFR 219 Subpart B.

Objection Opportunity (§ 219.50 through § 219.62)

The 36 CFR 218 project-level objection procedures apply to the project, while the 36 CFR 219 Subpart B objection procedures apply to the Forest Plan amendments.

Effective Date (§ 219.17(a)(2))

The project may be implemented no sooner than 30 days after the publication of the Notice of Availability of the Final EIS in the Federal Register (40 CFR 1506.10(b)).

Scope and Scale of the Amendments

The scope and scale of the Forest Plan programmatic amendment to change the management prescription area is specific to an area of 741 acres and covers only a small portion of the CTNF (less than a tenth of a percent). It would apply to all future projects and activities within this 741-acre area, as well as all resources within this area. This Forest Plan programmatic amendment would be effective for the life of the current Forest Plan. Specifically, this Forest Plan programmatic amendment would alter the management emphasis, action, measures, and prescriptions of the 741 acres that would be converted from 2.1.2 *Visual Quality Maintenance* to management prescription 4.2 *Special Use Authorization*. As management prescription 4.2 *Special Use Authorization* directs, the 741-acres would be expected to function as a ski area and future ski area-related projects would likely be proposed beyond what are included in the GTR MDP Projects DEIS, though any future projects would require separate and appropriate NEPA analysis.

The scope and scale of the project specific wildlife Forest Plan amendments are limited to areas where proposed project impacts overlap areas of resources covered under Forest Plan Standards. The project specific Forest Plan amendments are intended to exempt project specific impacts from complying with certain Forest Plan standards. They are also project-specific and do not apply to future projects in the Forest. These amendments are limited to wildlife resources (raptors) and are limited to the project area during project construction.

Programmatic Plan Amendment

Management Prescriptions

Components of the Action Alternatives fall primarily within the Management Prescription 4.2 *Special Use Permit Recreation Sites*; however, the proposed South Bowl and Mono Trees SUP boundary expansion areas are located outside of Grand Targhee Resort's (GTR) existing Special Use Permit (SUP) boundary on land that is currently designated as Management Prescription 2.1.2 *Visual Quality Maintenance* and Management Prescription 2.8.3 *Aquatic Influence Zone (AIZ)*. An amendment to the Targhee Forest Plan is necessary to incorporate the proposed SUP expansion areas into the GTR SUP area and designate them as Management Prescription 4.2 *Special Use Permit Recreation Sites*. Areas identified as Management Prescription 2.8.3 *Aquatic Influence Zone (AIZ)* would remain designated as such, but would be subject to the underlying direction of Management Prescription 4.2 *Special Use Permit Recreation Sites* rather than Area 2.1.2 *Visual Quality Maintenance* (1997 Forest Plan III-107).

Amendment Purpose (36 CFR § 219.13(b)(1))

The purpose of this Forest Plan amendment is to provide management direction better suited to guide the operation and future needs of the proposed developed recreation sites and activities located within the South Bowl and Mono Trees areas. The proposed South Bowl (Alternatives 2 and 4) and Mono Trees (Alternatives 2 and 5) SUP expansions are located in management prescriptions 2.1.2 *Visual Quality Maintenance* and 2.8.3 *Aquatic Influence Zone* (refer to **DEIS Figure 1**). There are 741 acres of land managed under management prescription 2.1.2 *Visual Quality Maintenance* and 125 acres managed as

2.8.3 Aquatic Influence Zone. The management and types of activities that would occur within the proposed SUP areas would not comply with the management direction provided under Management Prescription 2.1.2 *Visual Quality Maintenance*. Management Prescription 4.2 *Special Use Permit Recreation Sites* emphasizes providing privately operated types of recreation on National Forest System land for large, concentrated groups of people, as is intended in the proposed South Bowl and Mono Trees project areas. Therefore, the purpose of this Forest Plan amendment is to move approximately 741 acres from management prescription 2.1.2 *Visual Quality Maintenance* to management prescription 4.2 *Special Use Authorization*. With the change in the management prescription area surrounding the 125 acres of current management prescription 2.8.3 *Aquatic Influence Zone*, this 125 acres would no longer be managed as AIZ because of direction in the 1997 Forest Plan that states that Management Prescription 4.2 *Special Use Permit Recreation Sites* prescriptions would prevail over those of 2.8.3 *Aquatic Influence Zone* (1997 Forest Plan III-107).

Applicable Alternatives

The Proposed Action (Alternative 2), Alternative 4, and Alternative 5 would require amendments to the 1997 Forest Plan to accommodate the actions and activities that would occur within the proposed South Bowl (Alternatives 2 and 4) and Mono Trees (Alternatives 2 and 5) expansion areas.

Format for Plan Components (§ 219.13 (b)(4); § 219.7(e))

This programmatic Forest Plan amendment would apply to three Management Prescriptions within the GTR proposed SUP area by converting approximately 741 acres from Management Prescription 2.1.2 *Visual Quality Maintenance* to Management Prescription 4.2 *Special Use Authorization*. Approximately 125 acres of Management Prescription 2.8.3 *Aquatic Influence Zone* would also be affected under this alternative as the underlying Management Prescription 4.2 direction would supersede Management Prescription 2.8.3. Under the 1997 Forest Plan, Management Prescription 4.2 *Special Use Permit Recreation Site* prevails over other management prescriptions; therefore, only the underlying Management Prescription 2.1.2 would be amended under action alternatives that would incorporate SUP expansion areas into the GTR SUP boundary. In other words, Management Prescription 2.8.3 *Aquatic Influence Zone (AIZ)*, would persist under proposed conditions; however, it would be superseded by the direction of Management Prescription 4.2 *Special Use Permit Recreation Site*. No portion of the proposed SUP expansion would occur in areas classified as designated wilderness (management prescriptions 1.1.6, 1.1.7, and 1.1.8). Refer to **Figure 1** of the DEIS for a depiction of the proposed boundary expansion and Forest Plan management prescriptions.

Project Specific Forest Plan Amendments

Goshawk Habitat

A project specific Forest Plan amendment related to goshawk habitat is necessary to modify two Forest Plan Standards: (1) the size of each American goshawk area, and (2) management season for American goshawks to align the project actions with the Forest Plan standard direction. The standards to be amended, purpose of the amendment, and description of alternatives this amendment applies to follow.

Amendment Purpose (36 CFR § 219.13(b)(1))

1997 Forest Plan standards and guidelines related to American goshawk habitat are provided in Figure 1. Standards described in rows 2 and 8 of this figure are those that would be amended. While guidelines are

also shown in this figure, none of the guidelines would be amended under this proposal. A discussion of goshawk guidelines and the proposed project's ability to remain consistent with this direction is included in Chapter 3, **Section 3.13** and Appendix B.

Figure 1. Management standards and guidelines for all forest types within active and historic goshawk nesting territories (1997 Forest Plan 111-21)

Attribute	Nest Area	Post-Fledging Family Area	Foraging Area
Number of areas (S)	1	1	1
Size of each area (acres)(S)	≥ 200 acres	≥ 400	$\geq 5,400$
Size-Class Distribution for forested acres (%) (G)			
nonstocked seedling	0	≤ 20	≤ 20
sapling	0	≤ 20	≤ 20
pole	0	≤ 20	≤ 20
mature/old growth 1/	100	≥ 40	≥ 40
Rotation age (years) (G)	--	60 to 240	60 to 240
Maximum created opening (acres) (G)	0	≤ 40	≤ 40
Snags and Reserve Trees 2/ (G)	$\geq 60\%$ unless specified higher in prescription	$\geq 60\%$ unless specified higher in prescription	$\geq 60\%$ unless specified higher in prescription
Downed logs (average/acre)(G)	Forestwide S&Gs	Forestwide S&Gs	Forestwide S&Gs
Management Season (S)	Oct-Feb	Oct-Feb	Year-long
Thinning (G)	Non-uniform 3/	Non-uniform	by silvicultural prescription
Open Road Density 4/ (G)	No new system roads	No new system roads	\leq Management Rx Density
1/ Mature and old growth canopy closure for nest sites and post-fledging family areas should range between 75-100 percent (G) 2/ Refer to previous section on snag/cavity nesting habitat for explanation of biological potential 3/ Maximize diversity of structure 4/ Open roads in goshawk territories will be given priority for closure to meet management prescription road density standards. First priority will be to close roads in nest areas, second priority in post-fledging family areas, third priority in foraging areas. Where possible, open road density should be zero in the nest areas and the post-fledging family areas			

Some of the activities within the proposed Mono Trees expansion area under Alternatives 2 and 5 would impact the nesting, post-fledging family, and foraging areas for confirmed goshawk territory R04F15D56T17. In Alternatives 2 and 5, the Proposed Actions within the Mono Trees area includes management activities that do not comply with two standards *size of each area* and the *management season* described in rows two and eight respectively of Figure 1. These management activities include tree clearing and ski area operations. Therefore, a project specific Forest Plan amendment is necessary to align

the proposed management activities with the Forest Plan. Alternatives 3 and 4, do not include activities and addition of the Mono Trees area to the SUP, would have no direct impacts on the known American goshawk territory. For a complete discussion of Forest Plan consistency, followed by an analysis of the inconsistencies in the context of Forest-wide viability of the species, refer to Chapter 3, Section 3.16 – Wildlife and Appendix B. A detailed discussion of consistency with standards and guidelines is also included in the Wildlife biological evaluation (BE) prepared for this project. The specific standards that action alternatives are inconsistent with are as follows:

Size of Each Area (Standard):

This standard is described in the second row of the table depicting standards and guidelines related to goshawk habitat. Alternatives 2 and 5 would result in tree removal for the development of ski terrain and infrastructure, which would reduce availability of suitable habitat in the nesting, post-fledging, and foraging areas. As a result, the designated post-fledging family area would drop below 400 acres. Therefore, Alternatives 2 and 5 would not comply with the standard, and a project specific Forest Plan amendment is necessary.

Management Season (Standard):

This standard is described in the eighth row of the table depicting standards and guidelines related to goshawk habitat. Construction activities and vegetation removal for Alternatives 2 and 5 would occur in the nesting area and post-fledging family area outside the specified management season of October through February; therefore, a project specific Forest Plan amendment would be required as proposed projects would not be consistent with the Management Season Standard (as listed in column 1, row 8 of the goshawk standards and guidelines table). As such, clearing and construction practices would not be limited to the management season of October through February and could occur outside this time period.

Although the Management Season Standard would not be adhered to, a project design criteria (PDC) has been included that states “no vegetation clearing/construction activities associated with the action alternatives shall occur within the northern goshawk designated 200-acre nest area from April 1 to August 15” (refer to Table 2.4-1). This would ensure that proposed disturbances in the western extent of the Mono trees pod (for developed ski terrain and the bottom terminal of the proposed lift) would not cause undue impacts to nesting goshawks. For clarity, vegetation clearing and construction could proceed in all other areas that do not overlap the designated 200-acre nest area during the period April 1 to August 15. Additionally, another PDC states, “Tree clearing for construction of a segment of proposed summer trail along the western extent of the existing SUP area within the designated northern goshawk post fledging area shall only occur between October and February” (refer to Table 2.4-1). This PDC is specific to the proposed summer trail overlapping the post fledging area in the western extent of the existing SUP area, between the Sacajawea and Colter lifts.

Although implementing Alternatives 2 and 5 could result in the loss of territory R04F15D56T17 and its associated habitat, the proposed project would not threaten the overall viability of American goshawks across the Targhee Planning Area. The detailed analysis prepared for this project within the Wildlife BE and summarized in Chapter 3, Section 3.16 – Wildlife indicates that there are many American goshawk territories spread throughout the Targhee Planning Area, and habitat is not limiting across the area. Therefore, the purpose of these project specific Forest Plan amendments would be to exempt the Mono Trees expansion area proposed in the Proposed Action and Alternative 5 from complying with the standards that these alternatives are inconsistent with. Included with this amendment, would be a

requirement (through the PDC) that no clearing/construction activities occur within the designated nest area from April 1 to August 15.

Applicable Alternatives

This project specific Forest Plan amendment would apply to the Proposed Action (Alternative 2) and Alternative 5.

Format for Plan Components (§ 219.13 (b)(4); § 219.7(e))

This project specific Forest Plan amendment would exempt the Proposed Action (Alternative 2) and Alternative 5 analyzed in this EIS from the *size of each area* standard and *management season* standards provided for goshawk habitat in the 1997 Forest Plan. All future projects in this area would need to be consistent with relevant goshawk standards.

Flammulated Owl Habitat

As it relates to flammulated owl habitat, a project specific Forest Plan amendment is necessary to exempt all action alternatives from Flammulated Owl Habitat Standard 1. The standard to be amended, purpose of the amendment, and description of alternatives this amendment applies to follow.

Standard to be Amended

Flammulated Owl Habitat Standard 1:

Do not allow timber or firewood harvest activities within a 30-acre area around all known flammulated owl active and historic nest sites.

Amendment Purpose (36 CFR § 219.13(b)(1))

Flammulated owls were detected in the project area during pre-project surveys in 2019, which resulted in wildlife staff delineating five 30-acre nesting areas based on call strength and frequency. Grading and tree clearing for summer trails, access roads and/or ski trails are proposed in four of the buffers, while the two northern-most buffers are also proposed to have 40 percent tree removal for ski glades. All five buffers would be subject to tree removal associated with trail maintenance (for trails located either within and/or immediately adjacent to the buffers) or for safety reasons. A project specific Forest Plan amendment would be required under all action alternatives (Alternatives 2-5) to exempt proposed projects from Flammulated Owl Standard 1. This would pertain to all the known 30-acre nesting territories under Alternatives 2 and 5, and four 30-acre nesting territories under Alternatives 3 and 4. Included within the Forest Plan amendment would be a PDC describing a timing restriction, which would require that no vegetation clearing or construction associated with the action alternatives shall occur from May 1 to August 15 within the designated 30-acre nest areas, in order to protect nesting activities and prevent individual mortality. Vegetation clearing could occur during other times throughout the year and within the period of May 1 to August 15, so long as it was related to vegetation clearing or construction of project components outside the designated 30-acre nest areas (refer to **Table 2.4-1**).

The detailed analysis prepared for this project within the Wildlife BE and summarized in Chapter 3, Section 3.16 – Wildlife indicates that there is a wide presence of the species and availability of habitat across the Targhee Planning Area. The proposed projects are not anticipated to impact the viability of the species across the Targhee Planning Area. Therefore, the purpose of this proposed project specific Forest Plan amendment would be to exempt all of the action alternatives from complying with Flammulated Owl

Habitat Standard 1. Included with this amendment, would be a requirement that no vegetation clearing or construction occur from May 1 to August 15 within the designated 30-acre nest areas.

Applicable Alternatives

This project specific Forest Plan amendment would apply to the Proposed Action (Alternative 2), Alternative 3, Alternative 4, and Alternative 5.

Format for Plan Components (§ 219.13 (b)(4); § 219.7(e))

This project specific Forest Plan amendment would exempt the action alternatives analyzed in this EIS from Flammulated Owl Habitat Standard 1. All future projects in this area would need to be consistent with the Flammulated Owl Habitat Standard 1.

Boreal Owl Habitat

As it relates to boreal owl habitat, a project specific Forest Plan amendment is necessary to exempt all action alternatives from Boreal Owl Habitat Standard 1. The standard to be amended, purpose of the amendment, and description of alternatives this amendment applies to follow.

Standard to be Amended

Boreal Owl Habitat Standard 1:

Do not allow timber or firewood harvest activities within a 30-acre area around all known boreal owl active and historic nest sites.

Amendment Purpose (§ 219.13(b)(1))

Boreal owls were detected in the project area during pre-project surveys in 2019, and two 30-acre nesting areas were delineated based on call strength and frequency. A total of about 25.2 acres within these nesting areas would be impacted by the Proposed Action (Alternative 2) and Alternative 5, with about 23 acres occurring as 40 percent tree removal for ski glades, and the remainder being complete tree clearing. About 24.1 of the total 25.2 acres of potential impacts are for proposed developments in the Mono Trees expansion area, so impacts under Alternatives 3 and 4, which do not include proposed expansion into Mono Trees, would be less severe. Under Alternative 3 and 4, only 1.1 acres of impacts would occur from proposed projects within the existing SUP area, which overlaps the southern-most boreal owl nesting territory near the existing Colter lift. The Proposed Action and Alternative 5 would also include this same impact.

The detailed analysis prepared for this project within the Wildlife BE and summarized in **Section 3.13** indicates that there is substantial availability of habitat outside of the project area, and occurrences of boreal owls throughout the Targhee Planning Area. As a result, the proposed projects are not anticipated to jeopardize the viability of the species across the area. Therefore, the purpose of this project specific Forest Plan amendment would be to exempt the action alternatives from complying with the Boreal Owl Habitat Standard 1. This project specific Forest Plan amendment would allow tree removal within this 30-acre buffer area in order to implement the project. Additionally, a PDC describing a timing restriction would be included in this amendment that would prohibit vegetation clearing and construction associated with the action alternatives within the 30-acre buffers from occurring between March 1 to August 15. This measure is intended to protect nesting activities and prevent individual mortality during project construction. Vegetation clearing could occur during other times of the year and within the period of

March 1 to August 15, so long as it was related to vegetation clearing or construction of project components outside the designated 30-acre nest areas (refer to **Table 2.4-1**).

Applicable Alternatives

This project specific Forest Plan amendment would apply to the Proposed Action (Alternative 2), Alternative 3, Alternative 4, and Alternative 5.

Format for Plan Components (§ 219.13 (b)(4); § 219.7(e))

This project specific amendment to the Forest Plan would exempt the action alternatives analyzed in this EIS from Boreal Owl Habitat Standard 1. All future projects in this area would need to be consistent with the Boreal Owl Habitat Standard 1.

Peregrine Falcon Habitat

Standard to be Amended

Peregrine Falcon Habitat Standard 3:

Restrict climbing and other human disturbances from March 15 through July 31 to avoid adverse impacts at known falcon nest sites.

Amendment Purpose (§ 219.13(b)(1))

Forest Service surveys from as early as 1989 document nesting activity at multiple eyrie locations among cliffs on the southern side of Teton Canyon (above the Treasure Mountain Boy Scout Camp), approximately 1 mile south of the project area. The most recent activity in this area was documented in 2018. Less frequent nesting activity has been documented among the Apostles Cliff on the north side of Teton Canyon, which is about 0.12 mile south of the project area. The most recent documented observation from the Apostles Cliff occurred in 2008. The proposed activities across all action alternatives are within two miles of these known peregrine falcon eyries. The proposed projects would bring increased noise and activity closer to the eyries and has the potential to deter or disrupt nesting and foraging peregrine falcons. Specifically, activity between March 15 and July 31 close to the known Apostles Cliff eyrie could disturb or even prevent future nesting activity. A project specific Forest Plan Amendment is proposed to exempt the action alternatives from Peregrine Falcon Habitat Standard 3. The effects associated with this amendment and implementing the proposed projects would be most severe under alternatives which include expansion of the SUP boundary, because the expansion areas encroach further into Teton Canyon.

Although the action alternatives could potentially result in the loss of the two known eyrie locations in Teton Canyon, the detailed analysis prepared for this project within the Wildlife BE and summarized in **Section 3.13** indicates they would not reduce overall viability of the species across the Targhee Planning Area. This is due to the fact that nesting habitat does not appear to be limited in the Teton Canyon area, nor across the Targhee Planning Area, and peregrine falcons have been documented throughout the Targhee Planning Area. Abundance of cliff habitat in nearby Teton Canyon suggests that potential nesting habitat is not limited. Numerous eyries have also been documented throughout the Targhee Forest Plan Area. It must also be noted that recreation activity is currently high year-round in Teton Canyon, and continued peregrine falcon use of habitat in the area indicates that the birds may be somewhat tolerant of human activity. It is possible that projects impacts would not significantly impact the falcons in the

overall Teton Canyon area. Therefore, the purpose of this proposed project specific Forest Plan amendment would be to exempt the action alternatives from complying with Peregrine Falcon Habitat Standard 3.

Applicable Alternatives

This project specific Forest Plan amendment would apply to the Proposed Action (Alternative 2), Alternative 3, Alternative 4, and Alternative 5.

Format for Plan Components (§ 219.13 (b)(4); § 219.7(e))

This project specific amendment to the Forest Plan would exempt the action alternatives analyzed in this EIS from Peregrine Falcon Habitat Standard 3. All future projects in this area would need to be consistent with the Peregrine Falcon Habitat Standard 3. Amendments Consistent with Forest Service NEPA Procedures (§ 219.13(b)(3))

The resource effects of the proposed amendments are documented in the Grand Targhee Master Development Plan Projects Environment Impact Statement (GTR MDP Projects EIS) following Forest Service National Environmental Policy Act (NEPA) procedures at 36 CFR 220. A change in the management prescription in and of itself would not be considered a significant change in the plan for the purposes of NFMA. Furthermore, because there is no anticipated loss of viability across the Targhee Planning Unit for northern goshawk, flammulated owl, boreal owl, or peregrine falcon, the project specific wildlife amendments are not considered a significant change to the 1997 Forest Plan for purposes of the National Forest Management Act (§ 219.13(b)(3)). The wildlife project specific Forest Plan amendments only apply to this project and effects would be for a limited duration and spatial extent. Per direction in 36 CFR 219.16, and because an EIS is being prepared for the review of the proposed projects, and there is a potential for significant resource impacts beyond those requiring Forest Plan amendments, a 90-day comment period for the plan amendments and Draft EIS (DEIS) is required. This is also consistent with the direction provided at FSH 1909.12 - Land Management Planning Handbook, Chapter 20 – Land Management Plan.

How the 2012 Planning Rule Applies to the Plan Amendments³²⁴

The amendments to the 1997 Forest Plan have been prepared under the 2012 Planning Rule (36 CFR 219). The 2012 Planning Rule replaced the 1982 planning rule procedures that the Forest Service used to develop the existing Forest Plan. Therefore, the amendments must comply with the procedural provisions of the 2012 rule, and not the obsolete 1982 rule. The 2012 Planning Rule requires the decision document to explain how the responsible official for the amendment determined the scope and scale of the Forest Plan amendments and which specific substantive requirements of the 2012 Planning Rule within Sections 219.8 and 219.11 apply to the amendments and how they were applied.

Compliance with the Rule's Procedural Provisions

As explained below, these amendments comply with the procedural provisions of the 2012 Planning Rule (§ 219.13(b)).

³²⁴ Amendment that applies to all future projects

Using the Best Scientific Information to Inform the Planning Process (§ 219.3)

To identify the potential direct, indirect, irretrievable, irreversible, and cumulative impacts that may result from the Forest Plan amendments, the most accurate, reliable, and relevant information was considered. Best available data for wildlife species include field surveys of habitat types, camera traps, and past wildlife assessments for the CTNF. The particular information and documentation of how the information was used is included in the GTR MDP Projects DEIS and its supporting technical reports.

Providing Opportunities for Public Participation (§ 219.4) and Providing Public Notice (§ 219.16; § 219.13(b)(2))

At the time of scoping and Notice of Intent (August 26, 2020) it was determined that one Forest Plan amendment would be necessary, the amending of the management prescription. However, no other Forest Plan amendments were included; therefore, the four other proposed amendments were not included during this time of public participation.

As allowed by § 219.16.13(b)(2), required public notifications of plan amendments may be combined where appropriate. The initiation of the proposed plan amendments and invitation for comments on the amendments will be combined into one notification and comment period. The comment period will be at least 90 days (§ 219.16(a)(2)). Public notifications will be made by publication of the Notice of Availability in the Federal Register; by posting the notification on the project website; by mailing or e-mailing notifications to interested or affected parties per § 219.4(1) and (2); and by distributing a news release.

Individuals and entities who submit timely, specific written comments during designated opportunities for public comment will also have the opportunity to file an objection to the Forest Plan amendments (36 CFR 219.53).

Documenting Compliance with the Rule's Applicable Substantive Provisions³²⁵

As per 36 CFR 219.13(b)(5), the responsible official shall, “determine which specific substantive requirement(s) within 219.8 through 219.11 are directly related to the plan direction being added, modified, or removed by the amendment and apply such requirement(s) within the scope and scale of the amendment.

Substantive Provisions

The responsible official is not required to apply any substantive requirements that are not directly related to the amendment, and thus they are not discussed here. For the remaining substantive provisions from the 2012 Planning Rule that are directly related, the project would have no significant effect. Each substantive provision directly related to the project is discussed below.

³²⁵ The applicable substantive provisions of the Rule are within 36 CFR § 219.8–219.11. (81 FR 90723, December 15, 2016).

§ 219.8 Sustainability

- § 219.8(a)(1) Ecological Sustainability – Ecosystem Integrity – Ecological integrity of terrestrial and aquatic ecosystems and watersheds in the project area are adequately protected by existing Forest Plan guidance. The programmatic and project specific Forest Plan amendments would have direct, indirect, and cumulative impact on the ecological integrity of the project area (see EIS **Sections 3.12 – 3.16**). However, given the limited scope and scale of these impacts at the ecosystem scale, impacts are expected to be negligible.
- § 219.8(a)(2) Ecological Sustainability – Air, Soil, and Water – Air quality, soils and soil productivity, water quality, and water resources are addressed in the Forest Plan. The programmatic Forest Plan amendment to change the management prescription area may have direct, indirect, and cumulative impacts to water resources within the proposed SUP expansion areas (see EIS **Sections 3.14 – 3.16**). However, these impacts would not be significant at the ecosystem scale due to the limited scope and scale of the proposed management prescription conversion.
- § 219.8(a)(3) Ecological Sustainability – Riparian Areas – Ecological integrity of riparian areas is adequately protected in the Forest Plan to reduce resource concerns. The cumulative Forest Plan amendment to change the management prescription area would have direct, indirect, and cumulative impacts on riparian areas within the areas proposed for conversion (see EIS **Section 3.16**). However, given specific project design criteria, and the limited scope and scale of the proposed management prescription conversion, these impacts are expected to be minimized and not significant. Also, given the limited scope and scale of the management prescription conversion, the impacts would not be significant.
- § 219.8(a)(4) Ecological Sustainability – Best Management Practices for Water Quality – Existing Forest Plan standards address best management practices for water quality by matching regional water conservation practices handbook management measures.
- § 219.8(b) Social and Economic Sustainability – The project would not have a direct effect that is outside the scope of existing Forest Plan direction on social and economic sustainability (§219.8(b), see EIS **Section 3.4**). Timing restrictions do not directly impact social and economic sustainability.
- § 219.8(b)(2) Social and Economic Sustainability – Sustainable Recreation – The project has been designed to be compliant with recreation direction in the Forest Plan regarding sustainable recreation including recreation settings, opportunities, access, and scenic character (see EIS **Section 3.1**).
- §219.8(b)(5) Social and Economic Sustainability – Cultural and Historic Resources and Uses – The project would have no effect on Forest Plan direction for cultural and historic resources, or management of areas of tribal importance. The project does not occur in areas of tribal importance (see EIS **Section 3.6**).

§ 219.9 Diversity of Plant and Animal Communities

- § 219.9(a) Ecosystem Plan Components – Ecosystem plan components to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area are adequately addressed by existing Forest Plan guidance and project-specific measures are in place to reduce resource concerns. The cumulative Forest Plan amendment to change the management

prescription area would have direct, indirect, and cumulative impacts on terrestrial and aquatic ecosystems and watersheds within the areas proposed for management prescription conversion; however, these impacts would not be significant at the ecosystem scale due to the limited scope and scale of the proposed management prescription conversion (see EIS **Sections 3.12 – 3.16**).

- There is no anticipated loss of viability across the Targhee Planning Unit for American goshawk, flammulated owl, boreal owl, or peregrine falcon associated with the wildlife project specific Forest Plan amendments; therefore, the project specific wildlife amendments are not considered a significant change to the 1997 Forest Plan for purposes of the National Forest Management Act (§ 219.13(b)(3), see EIS **Section 3.13**). The wildlife project specific Forest Plan amendments only apply to this project.
- § 219.9(b) Additional, Species-Specific Plan Components – Species-specific plan components are adequately addressed by existing Forest Plan guidance and project specific measures are in place to reduce resource concerns. The cumulative Forest Plan amendment to change the management prescription area would have direct, indirect, and cumulative impacts on plant and animal communities within the areas proposed for management prescription conversion; however, these impacts would not be significant at the ecosystem scale due to the limited scope and scale of the proposed management prescription conversion (see EIS **Sections 3.12 – 3.13**).
- § 219.9(c) – Species of Conservation Concern – Species of conservation concern are adequately addressed by existing Forest Plan guidance and project specific measures are in place to reduce resource concerns (see EIS **Sections 3.12 – 3.13**).

§ 219.10 Multiple Use

- § 219.10(a) Integrated Resource Management for Multiple Use – The limited nature of the project has no direct impact on integrated resource management to provide for ecosystem services and multiple uses (see EIS **Sections 3.12 – 3.16**).
- § 219.10(b)(i) Requirements for Plan Components for a New Plan or Plan Provision – Sustainable Recreation – The project has been designed to be compliant with recreation direction in the Forest Plan regarding sustainable recreation including recreation settings, opportunities, access, and scenic character (see EIS **Section 3.1**).
- § 219.10(b)(ii) Requirements for Plan Components for a New Plan or Plan Provision – Protection of Cultural and Historic Resources – The project would have no effect on Forest Plan direction for cultural and historic resources (see EIS **Section 3.6**).
- § 219.10(b)(iii) Requirements for Plan Components for a New Plan or Plan Provision – Management of Areas of Tribal Importance – The project would have no effect on Forest Plan direction for management of areas of tribal importance. The project does not occur in areas of tribal importance.
- § 219.10(b)(iv) Requirements for Plan Components for a New Plan or Plan Provision – Congressionally Designated Wilderness – The project would have no effect on Forest Plan direction for congressionally designated areas or areas recommended for wilderness designation. The project does not occur in areas of wilderness or recommended wilderness.

- § 219.10(b)(v) Requirements for Plan Components for a New Plan or Plan Provision – Wild and Scenic Rivers – The project would have no effect on Forest Plan direction for wild and scenic rivers. The project does not occur in areas of wild or scenic rivers, or rivers found eligible or determined suitable for the National Wild and Scenic River system.
- § 219.10(b)(vi) Requirements for Plan Components for a New Plan or Plan Provision – Appropriate Management of Other Designated Areas – The project is proposed in an area suitable to the management of ski areas with no other designations or proposed designations within the project area.

§ 219.11 Timber Requirements based on the NFMA

- The project is compliant with existing Forest Plan guidance regarding: lands not suited for timber production; timber harvest for purposes other than timber production; timber harvesting in the plan area on a sustained-yield basis; timber harvest of even-aged stands for regeneration, including maximum openings; and protections for soil slope or other watershed conditions, and protection of soil, watershed, fish, wildlife, recreation, and aesthetic resources related to timber harvest (219.11(a), 219.11(c), 219.11(d)(2), 219.11(d)(3), 219.11(d)(4), 219.11(d)(5), 219.11(d)(6), 219.11(d)(7)).

Appendix D: Comparison Summary of Direct and Indirect Environmental Consequences

Table 2-3. Comparison Summary of Direct and Indirect Environmental Consequences

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
Recreation The action alternatives have the potential to affect the existing recreational opportunities and experiences within GTR's existing and proposed operational area and nearby NFS lands during both the winter and summer seasons	<i>Quantification of existing and proposed terrain acreage by ability level compared to the existing condition and industry standards.</i>	<ul style="list-style-type: none"> GTR's terrain network would consist of approximately 680 acres of developed terrain in addition to undeveloped terrain offerings The deficit of developed beginner and low-intermediate terrain and surplus of advanced and expert terrain compared with industry standards would persist 	<ul style="list-style-type: none"> GTR's terrain network would consist of approximately 930 acres of developed terrain in addition to undeveloped terrain offerings Proposed terrain projects would increase beginner, intermediate, advanced-intermediate, and expert terrain acreage The deficit of developed beginner and low-intermediate terrain and surplus of advanced and expert terrain compared with industry standards would persist 	<ul style="list-style-type: none"> GTR's terrain network would consist of approximately 765 acres of developed terrain in addition to undeveloped terrain offerings Proposed terrain projects would result in a lower acreage of intermediate, advanced-intermediate, and expert terrain than the Proposed Action Alternative 3 would offer a greater selection of trails and difficulties within the SUP boundary but would not address shortcomings in terrain variety without the Mono 	<ul style="list-style-type: none"> GTR's terrain network would consist of approximately 830 acres of developed terrain in addition to undeveloped terrain offerings Proposed terrain projects would result in a higher distribution of expert terrain Alternative 4 would increase the variety of undeveloped terrain by incorporating South Bowl into GTR's terrain network The deficit of developed beginner and low-intermediate 	<ul style="list-style-type: none"> GTR's terrain network would consist of approximately 860 acres of developed terrain in addition to undeveloped terrain offerings Proposed terrain projects would result in a higher distribution of intermediate terrain Alternative 5 would increase the variety of undeveloped terrain by incorporating Mono Trees into GTR's terrain network Alternative 5 would increase the distribution of intermediate trails, however, the deficit of

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
				Trees and South Bowl areas for both developed and undeveloped terrain	terrain and surplus of advanced and expert terrain compared with industry standards would persist	developed beginner and low-intermediate terrain and surplus of advanced and expert terrain compared with industry standards would persist
	<i>Both quantitative and qualitative discussion of the change in skier density in relation to guest experiences as compared to existing conditions.</i>	<ul style="list-style-type: none"> • Skier/Rider Distribution by ability level is as follows: • Beginner – 1 percent • Novice – 10 percent • Low-intermediate – 7 percent • Intermediate – 40 percent • Advanced-intermediate – 27 percent • Expert – 15 percent • Under the No Action Alternative, the deficit of developed beginner and low-intermediate 	<ul style="list-style-type: none"> • Skier/Rider Distribution by ability level is as follows: • Beginner – 1 percent • Novice – 4 percent • Low-intermediate – 7 percent • Intermediate – 44 percent • Advanced-intermediate – 29 percent • Expert – 15 percent • Under the Proposed Action, the distribution of intermediate terrain would increase to 44 percent, and advanced- 	<ul style="list-style-type: none"> • Skier/Rider Distribution by ability level is as follows: • Beginner – 1 percent • Novice – 4 percent • Low-intermediate – 9 percent • Intermediate – 44 percent • Advanced-intermediate – 26 percent • Expert – 15 percent • Alternative 3 would result in lower acreage of intermediate, advanced-intermediate, and expert terrain as 	<ul style="list-style-type: none"> • Skier/Rider Distribution by ability level is as follows: • Beginner – 1 percent • Novice – 4 percent • Low-intermediate – 8 percent • Intermediate – 43 percent • Advanced-intermediate – 26 percent • Expert – 17 percent • Alternative 4 would result in more distribution of expert terrain with the addition of 	<ul style="list-style-type: none"> • Skier/Rider Distribution by ability level is as follows: • Beginner – 1 percent • Novice – 4 percent • Low-intermediate – 8 percent • Intermediate – 45 percent • Advanced-intermediate – 29 percent • Expert – 13 percent • Alternative 5 would result in an increase in distribution of intermediate trails with the addition of Mono Trees. • Beginner, novice, and low-

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		<p>terrain and the surplus of advanced-intermediate and expert terrain would continue.</p> <ul style="list-style-type: none"> The deficit in low-intermediate terrain indicates that it can be difficult for skiers/riders to progress from novice-level to intermediate level. The surplus of advanced- and expert-level terrain reflects the market niche of GTR. This surplus is not seen as a constraint, as long as other ability levels are well balanced. 	<p>intermediate and expert terrain would remain well above market standards. These changes reflect the skier market at GTR.</p> <ul style="list-style-type: none"> There is a decrease in distribution of novice and low-intermediate terrain due to the proposed realignment of Teton Vista Traverse, which would be changed from novice to intermediate as a result. Since skier and rider distribution for each ability level is a proportion of the total, the distribution of an ability level can decrease even when the trail area of that ability level increases. 	<p>compared to the Proposed Action.</p> <ul style="list-style-type: none"> There would still be a surplus of advanced-intermediate and expert terrain, but there would also be an increase in acreage and distribution of beginner and intermediate terrain, aligning with the purpose and need. A variety of advanced terrain is important for meeting the expectations of advanced and expert skiers. However, Alternative 3 would not provide the gladed skiing in Mono Trees or the chutes, bowls and gladed skiing in South Bowl like the Proposed Action would provide. 	<p>South Bowl, but a lower distribution of advanced-intermediate and novice terrain as compared to the Proposed Action.</p> <ul style="list-style-type: none"> Intermediate, advanced-intermediate, and expert terrain would remain above the market standard, meeting the expectations of GTR's guests. Alternative 4 would meet the purpose and need of increasing the quantity of beginner, intermediate, advanced-intermediate terrain to meet current and anticipated public demand. 	<p>intermediate terrain distribution would continue to be below the skier market. But Alternative 5 would still meet the purpose and need of increasing intermediate and advanced-intermediate offerings as well as increasing beginner terrain acreage through improvement projects.</p>

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<ul style="list-style-type: none"> There is still a deficit in distribution as compared to market standards, but the increases in other terrain ability levels align with GTR's purpose and need of increasing beginner, intermediate, and advanced-intermediate terrain. 			
	<i>Quantification of existing and proposed Comfortable Carrying Capacity (CCC) and skier visitation as compared to existing conditions.</i>	<ul style="list-style-type: none"> CCC would remain at the existing 3,720 guests per day Based on projections, peak visitation would be in the 2028/29 season at 265,342 visitors total, an increase of 38,597 from the 2022/23 season 	<ul style="list-style-type: none"> CCC would increase to 6,170 guests per day Based on projections, peak visitation for this alternative would be 330,866 visitors total, an increase of 65,525 from peak visitation in the No Action alternative 	<ul style="list-style-type: none"> CCC would increase to 4,910 guests per day Based on projections, peak visitation for this alternative would be 278,605 visitors total, an increase of 13,264 from peak visitation in the No Action alternative 	<ul style="list-style-type: none"> CCC would increase to 5,480 guests per day Based on projections, peak visitation for this alternative would be 303,389 visitors total, an increase of 38,047 from peak visitation in the No Action alternative 	<ul style="list-style-type: none"> CCC would increase to 5,600 guests per day Based on projections, peak visitation for this alternative would be 304,304 visitors total, an increase of 38,962 from peak visitation in the No Action alternative

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>Quantitative and qualitative discussion of existing and proposed guest service space and other amenities as it relates to guest experience.</i>	<ul style="list-style-type: none"> Guest service space and other amenities related to guest experience would remain unchanged 	<ul style="list-style-type: none"> Ski patrol operations would be expanded into the Mono Trees and South Bowl areas, including the mitigation of avalanche risks in this terrain New facilities and guest services would be constructed to balance the anticipated increase in CCC including on-mountain restaurants at the top of Sacajawea and Dreamcatcher lifts; guest facilities at the top of the Shoshone Lift, in Rick's Basin, and on Lightning Ridge near the top terminal of the proposed Mono Trees Lift; and a storage and vault toilet facility at the base of the North Boundary Lift and base of the Proposed South 	<ul style="list-style-type: none"> Ski patrol operations would not be expanded New facilities and guest services would be constructed to balance the anticipated increase in CCC including on-mountain restaurants at the top of Sacajawea and Dreamcatcher lifts; guest facilities at the top of the Shoshone Lift and in Rick's Basin; and a storage and vault toilet facility at the base of the North Boundary Lift. Improvements would be made to the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility. 	<ul style="list-style-type: none"> Ski patrol operations would be expanded into the South Bowl Area, with associated avalanche mitigation measures New facilities and guest services would be constructed to balance the anticipated increase in CCC the same as the Proposed Action except the guest facility on Lightning Ridge. 	<ul style="list-style-type: none"> Ski patrol operations would be expanded into the Mono Trees area New facilities and guest services would be constructed to balance the anticipated increase in CCC the same as the Proposed Action except for the vault toilet at the bottom of the South Bowl Lift and the associated avalanche mitigation infrastructure.

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			Bowl Lift. Improvements would be made to the existing vault toilet at the bottom of the Blackfoot Lift to include a storage facility.			
	<i>Qualitative discussion of existing and proposed use of backcountry areas within the study area (Teton Canyon and South Leigh Canyon).</i>	<ul style="list-style-type: none"> Participation in backcountry recreation is anticipated to increase with current trends 	<ul style="list-style-type: none"> South Bowl would be incorporated into GTR's SUP boundary and would no longer exist as an opportunity for backcountry recreation in the winter months By removing approximately 266 acres of backcountry terrain adjacent to GTR, it is anticipated that backcountry use of other nearby areas, such as Teton Canyon and South Leigh Canyon, could increase 	<ul style="list-style-type: none"> Alternative 3 does not include an expansion to the GTR SUP boundary, therefore it is not expected to have measurable impacts on recreational uses of backcountry areas within the study area 	<ul style="list-style-type: none"> South Bowl would be incorporated into GTR's SUP boundary; therefore Alternative 4 would have the same impacts as the Proposed Action in Teton Canyon and South Leigh Canyon 	<ul style="list-style-type: none"> Alternative 5 does not include the incorporation of South Bowl into the GTR SUP boundary, therefore it is not expected to have measurable impacts on recreational uses of backcountry areas within the study area
	<i>Qualitative discussion of GTR guests leaving the resort via Teton Canyon.</i>	<ul style="list-style-type: none"> Guests leaving the resort via Teton Canyon is anticipated to 	<ul style="list-style-type: none"> Some users seeking a backcountry experience may 	<ul style="list-style-type: none"> Similar to the No Action Alternative, guests leaving 	<ul style="list-style-type: none"> Guests leaving the resort would be similar to the Proposed 	<ul style="list-style-type: none"> Similar to the No Action Alternative, guests leaving

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		increase, which could be exacerbated in South Bowl by the presence of the Peaked Lift	exit the SUP boundary just below Mary's Nipple into Teton Canyon and ski backcountry terrain to the extent possible for them to return to the South Bowl lift	the resort via Teton Canyon is anticipated to increase, which could be exacerbated in South Bowl by the presence of the Peaked Lift	Action with the incorporation of South Bowl terrain	the resort via Teton Canyon is anticipated to increase, which could be exacerbated in South Bowl by the presence of the Peaked Lift
	<i>Qualitative analysis and discussion of existing and proposed guest experiences for winter and summer recreation activities at GTR, including the experience of non-skiing guests during the winter months.</i>	<ul style="list-style-type: none"> Current summer and winter alternate activities would still be provided 	<ul style="list-style-type: none"> The incorporation of the South Bowl would allow for avalanche control and other safety procedures in this area, which would greatly reduce safety hazards The incorporation of Mono Trees would provide additional developed and undeveloped terrain for intermediate and advanced intermediate skiers, including gladed skiing opportunities, which would support a skills progression from 	<ul style="list-style-type: none"> Additional facilities within the SUP boundary would accommodate the anticipated increase in CCC and would provide a balanced amount of space under proposed conditions All multi-season recreation projects included in the Proposed Action are also included in Alternative 3; therefore recreation impacts and guest experience would be consistent with those of the Proposed Action 	<ul style="list-style-type: none"> Impacts would be the same as the Proposed Action except for the incorporation of Mono Trees 	<ul style="list-style-type: none"> Impacts would be the same as the Proposed Action except for the incorporation of South Bowl

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>intermediate to advanced ability levels</p> <ul style="list-style-type: none"> • Additional facilities would accommodate the anticipated increase in CCC and would provide a balanced amount of space under proposed conditions • Additional activities such as the zip line, canopy tour, disc golf course, and non-skiing winter activities would provide user groups such as families, the elderly/aging, or those with disabilities with an opportunity to interact with the CTNF in a meaningful way that is currently non-existent within the GTR SUP area 			
	<i>Qualitative analysis of existing and proposed user demand and access in the South Bowl and</i>	<ul style="list-style-type: none"> • The No Action Alternative does not include a SUP expansion 	<ul style="list-style-type: none"> • Backcountry use of areas near GTR such as Teton Canyon and 	<ul style="list-style-type: none"> • Similar to the No Action Alternative, Alternative 3 	<ul style="list-style-type: none"> • Impacts would be the same as the Proposed Action with the 	<ul style="list-style-type: none"> • Alternative 5 does not include the incorporation of South Bowl into

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>Mono Trees proposed expansion areas for winter and summer recreation activities occurring beyond GTR's existing operational boundary (e.g., snowmobiling, backcountry skiing, splitboarding, snowshoeing, mountain biking, hiking).</i>	<p>into the South Bowl and Mono Trees areas</p> <ul style="list-style-type: none"> • Demand for multi-season recreation opportunities is expected to continue to grow both within and around GTR's SUP area 	<p>South Leigh Canyon could increase, including a minor increase in snowmobile use in Teton Canyon to shuttle skiers accessing backcountry terrain from the SUP back to their cars</p>	<p>does not include a SUP expansion into the South Bowl and Mono Trees areas</p> <ul style="list-style-type: none"> • Demand for multi-season recreation opportunities is expected to continue to grow both within and around GTR's existing SUP area 	<p>incorporation of South Bowl into the SUP boundary</p>	<p>the GTR SUP boundary</p> <ul style="list-style-type: none"> • Demand for multi-season recreation opportunities is expected to continue to grow both within and around GTR's existing SUP area
	<i>Qualitative discussion of increasing developed recreation opportunities to concentrate recreation use and reduce the strain on other developed/dispersed recreation sites throughout the district as compared to existing conditions.</i>	<ul style="list-style-type: none"> • The No Action Alternative would not increase developed recreation opportunities 	<ul style="list-style-type: none"> • All action alternatives may attract visitors who would otherwise have visited nearby NFS lands, particularly those seeking a more developed recreational experience in the summer; however, some user groups may also be displaced by additional development and increased use of trails within the GTR SUP boundary. • All action alternatives may reduce overall trail use on NFS lands surrounding GTR but would likely increase the use of overnight facilities such as campgrounds and dispersed camping areas near GTR, particularly in Teton Canyon. 			
	<i>Qualitative discussion of existing outfitters/guides operating in the area of the proposed SUP expansion and the potential change as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> • The No Action Alternative would not impact outfitter/guide operations on surrounding NFS lands 	<ul style="list-style-type: none"> • The incorporation of backcountry terrain into the GTR SUP boundary may impact outfitter and guiding companies; these outfitters 	<ul style="list-style-type: none"> • Alternative 3 does not include an expansion of the GTR SUP boundary so it is not expected to have measurable impacts to outfitters/guides 	<ul style="list-style-type: none"> • Impacts to outfitter and guides would be the same as the Proposed Action by incorporating the South Bowl 	<ul style="list-style-type: none"> • Without the incorporation of South Bowl into the SUP boundary, Alternative 5 is not expected to have measurable impacts to

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			may need to have their operational areas relocated to other areas of the CTNF if negatively affected by the incorporation of South Bowl into the GTR SUP area	operating in the area of proposed SUP expansion	into the SUP boundary	outfitters/guides operating in the area of proposed SUP expansion
	<i>Qualitative discussion of season of use for each activity and change in recreation opportunities both within the existing SUP and in the proposed expanded SUP under the Action Alternatives as compared to existing conditions.</i>	<ul style="list-style-type: none"> Both summer and winter uses are expected to increase for all alternatives 	<ul style="list-style-type: none"> 930 acres of ski terrain would be available Multi-season recreational opportunities would be increased with the addition of a canopy tour/fly line, zip line, an aerial adventure course, 29 miles of summer trails, snow tubing, and increased ski terrain and variety 	<ul style="list-style-type: none"> 765 acres of ski terrain would be available All multi-season recreational opportunities included in the Proposed Action would be included 	<ul style="list-style-type: none"> 830 acres of ski terrain would be available All multi-season recreational opportunities included in the Proposed Action would be included 	<ul style="list-style-type: none"> 860 acres of ski terrain would be available All multi-season recreational opportunities included in the Proposed Action would be included
Scenery Through the expansion of GTR's operational boundary into lands previously beyond	<i>Identification of direction for scenery management as provided by the Targhee National Forest Plan, including relevant standards and</i>	<ul style="list-style-type: none"> Under the No Action Alternative, NFS lands within and adjacent to the GTR SUP area would remain in 	<ul style="list-style-type: none"> Proposed projects within the GTR SUP area and the Mono Trees SUP expansion would alter the appearance of 	<ul style="list-style-type: none"> Proposed projects within the GTR SUP area would alter the appearance of the area and add incrementally to 	<ul style="list-style-type: none"> Proposed projects within the GTR SUP area would alter the appearance of the area and add 	<ul style="list-style-type: none"> Proposed projects within the GTR SUP area and the Mono Trees SUP expansion would alter the appearance of

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
GTR operations (including installation of new infrastructure and other terrain alterations), the action alternatives have the potential to affect the scenic integrity and dark skies of surrounding lands, including from GTNP, the Jedediah Smith Wilderness, the Teton Scenic Byway, Teton Canyon and the identified critical viewpoints in the vicinity. In addition, the proposed expansion in the South Bowl and Mono Trees areas would change the Forest Plan management area from 2.1.2: Visual Quality Maintenance to 4.2: Special Use Authorization Recreation Site.	<i>guidelines, established Visual Quality Objectives (VQOs) and discussion of the necessary amendments to the 1997 Forest Plan and qualitative discussion of potential changes under the Action Alternatives.</i>	<p>compliance with relevant standards, guidelines, and VQOs from the Forest Plan.</p> <ul style="list-style-type: none"> The No Action Alternative would not require a Forest Plan Amendment. 	<p>the area and add incrementally to the developed character of the landscape when viewed from the west and northwest. Proposed projects within the GTR SUP, South Bowl, and Mono Trees areas would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes.</p> <ul style="list-style-type: none"> The proposed SUP expansion in the South Bowl and Mono Trees areas would change the Forest Plan management 	<p>the developed character of the landscape when viewed from the west and northwest. These projects would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes.</p> <ul style="list-style-type: none"> Alternative 3 would not require a Forest Plan Amendment. 	<p>incrementally to the developed character of the landscape when viewed from the west and northwest. Proposed projects within the GTR SUP and South Bowl SUP expansion would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes.</p> <ul style="list-style-type: none"> The proposed SUP expansion in the South Bowl area would change the Forest Plan management area from 2.1.2: Visual Quality 	<p>the area and add incrementally to the developed character of the landscape when viewed from the west and northwest. Proposed projects within the GTR SUP and Mono Trees areas would introduce form, line, color, and texture that is not presently common when viewed from the southwest, east, and southeast; however, ski area activities would remain visually subordinate to the visual strength of the characteristic landscapes.</p> <ul style="list-style-type: none"> The proposed SUP expansion in the Mono Trees area would change the Forest Plan management area from 2.1.2: Visual Quality Maintenance to 4.2: Special Use

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			area from 2.1.2: Visual Quality Maintenance to 4.2: Special Use Authorization Recreation Site.		Maintenance to 4.2: Special Use Authorization Recreation Site.	Authorization Recreation Site.
	<i>Identification of direction for scenery management as provided by the Built Environment Image Guide (BEIG), including guidelines for materials, colors and reflectivity and adherence to under the Action Alternatives.</i>	<ul style="list-style-type: none"> Under the No Action Alternative, structures on NFS lands within and adjacent to the GTR SUP area would remain in compliance with relevant direction from the BEIG. 	<ul style="list-style-type: none"> Under all action alternatives, prior to construction, all proposed infrastructure, including facilities and lifts, would undergo Forest Service review to ensure compliance with the BEIG. This includes considering the landscape, cultural and ecological character, as well as the architectural guidelines for the Rocky Mountain Province which include descriptions of appropriate siting, massing, scale, structure, materials, color, and sustainability efforts. 			
	<i>Qualitative analysis of scenic impacts including changes in views from the foreground, middleground, and background distance zones as well as changes in form, line, and color from existing conditions from the identified critical viewpoints (including identification of view duration and intensity from each): Ashton, Buck Mountain Pass, Colter Building top floor (Driggs; winter and summer), Grand Teton (summit),</i>	<ul style="list-style-type: none"> Under the No Action Alternative there would be no scenic impacts to the identified critical viewpoints. 	<ul style="list-style-type: none"> The proposed Fred's Mountain Top Guest Facility, lifts, ski terrain, and other projects within the GTR SUP would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and background 	<ul style="list-style-type: none"> The proposed Fred's Mountain Top Guest Facility, lifts, ski terrain, and other projects within the GTR SUP would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and background 	<ul style="list-style-type: none"> The proposed Fred's Mountain Top Guest Facility, lifts, ski terrain, and other projects within the GTR SUP would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and 	<ul style="list-style-type: none"> The proposed Fred's Mountain Top Guest Facility, lifts, ski terrain, and other projects within the GTR SUP would result in minor and incremental impacts to the existing developed landscape when viewed from the foreground, middleground (view 13), and background

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>Hastings Lane (Driggs; winter and summer), Hurricane Pass, Lower Saddle (between the Middle and Grand Teton), Middle Teton (summit), Mount Meek Pass, Paintbrush Divide, Teton Canyon Overview Observation Site, South Leigh Lakes, South Teton/Devil Stairs Trail, Static Peak, Table Mountain (Jedediah Smith Wilderness; winter and summer), Teewinot Mountain, Teton Scenic Byway, and Tetonia, ID (winter and summer).</i>		<p>(views 3, 4, 6, 7, 20, 21, and 22) distance zones.</p> <ul style="list-style-type: none"> The proposed South Bowl lift, ski trails, ski patrol facility, and other projects in South Bowl may be visible from multiple locations within the adjusted SUP area and on adjacent NFS and NPS lands, including views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23. The proposed Mono Trees lift, ski trails and glades, and the proposed bottom terminal access road may be visible from multiple locations within the adjusted SUP area and on adjacent NFS lands, including views 3, 4, 6, 7, 13, 20, 21, and 22. 	<p>(views 3, 4, 6, 7, 20, 21, and 22) distance zones.</p>	<p>background (views 3, 4, 6, 7, 20, 21, and 22) distance zones.</p> <ul style="list-style-type: none"> The proposed Mono Trees lift, ski trails and glades, and the proposed bottom terminal access road may be visible from multiple locations within the adjusted SUP area and on adjacent NFS lands, including views 3, 4, 6, 7, 13, 20, 21, and 22. Scenic impacts associated with the Mono Trees projects would be similar to those described for the existing SUP area; however, the projects would be located in an area that is currently void of ski area development and exists in a 	<p>(views 3, 4, 6, 7, 20, 21, and 22) distance zones.</p> <ul style="list-style-type: none"> The proposed South Bowl lift, ski trails, ski patrol facility, and other projects in South Bowl may be visible from multiple locations within the adjusted SUP area and on adjacent NFS and NPS lands, including views 5, 8, 9, 10, 11, 15, 16, 17, 18, 19, and 23. Scenic impacts associated with the South Bowl projects would be similar to those described for the existing SUP area; however, the projects would be located in an area that is currently void of ski area development and exists in a near natural state.

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<ul style="list-style-type: none"> Scenic impacts associated with the South Bowl and Mono Trees projects would be similar to those described for the existing SUP area; however, the projects would be located in an area that is currently void of ski area development and exists in a near natural state. 		near natural state.	
	<p><i>Visual simulations will be considered for all critical viewpoints within (or near) 6.9 miles of the project area. A qualitative discussion of existing conditions of GTR operations as compared to the Action Alternatives would be completed from the following viewpoints: (1) Table Mountain, (2) Teton Canyon valley floor, (3) Driggs, and (4) Middle Teton.</i></p>	<ul style="list-style-type: none"> The existing landscape would remain unchanged 	<ul style="list-style-type: none"> Visual simulations were prepared for the Town of Driggs (Coulter Building Rooftop), the Grand Teton, Table Mountain, and the Teton Canyon valley floor (refer to Figures 9a, 9b, 10a, 10b, 11a, 11b, 12a, and 12b). Projects both within the existing GTR SUP and in the proposed SUP expansion areas would result in modifications to the existing landscape 			
	<p><i>Qualitative analysis of visual simulations completed from</i></p>	<ul style="list-style-type: none"> Under the No Action Alternative there would be 	<ul style="list-style-type: none"> Fred's Mountain Top Guest Facility is 	<ul style="list-style-type: none"> Fred's Mountain Top Guest Facility is 	<ul style="list-style-type: none"> Fred's Mountain Top Guest Facility is 	<ul style="list-style-type: none"> Fred's Mountain Top Guest Facility is

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>viewpoints outside the 6.9-mile buffer zone of changes in dark sky designations as the result of night lighting under the Action Alternatives.</i>	no impacts to the Dark Sky characteristics of surrounding NFS and private lands.	<p>proposed for daytime use only; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations, which would primarily occur in the early morning. Implementation of the proposed lighting is not anticipated to be visible from surrounding views beyond the foreground.</p> <ul style="list-style-type: none"> Lights are proposed on Palmer's Raceway in conjunction with the proposed Palmer's Platter surface lift. Lighting fixtures may be visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) 	<p>proposed for daytime use only; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations, which would primarily occur in the early morning. Implementation of the proposed lighting is not anticipated to be visible from surrounding views beyond the foreground.</p> <ul style="list-style-type: none"> Lights are proposed on Palmer's Raceway in conjunction with the proposed Palmer's Platter surface lift. Lighting fixtures may be visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) 	<p>proposed for daytime use only; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations, which would primarily occur in the early morning. Implementation of the proposed lighting is not anticipated to be visible from surrounding views beyond the foreground.</p> <ul style="list-style-type: none"> Lights are proposed on Palmer's Raceway in conjunction with the proposed Palmer's Platter surface lift. Lighting fixtures may be visible from foreground, middleground (view 13), and background 	<p>proposed for daytime use only; however, subtle low-lying light fixtures may be installed outside the facility for maintenance and to prepare for daily operations, which would primarily occur in the early morning. Implementation of the proposed lighting is not anticipated to be visible from surrounding views beyond the foreground.</p> <ul style="list-style-type: none"> Lights are proposed on Palmer's Raceway in conjunction with the proposed Palmer's Platter surface lift. Lighting fixtures may be visible from foreground, middleground (view 13), and background (views 3, 4, 6, 7, 20, 21, and 22) views to the west

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			views to the west of the SUP area. Visibility of night lighting fixtures would not constitute a considerable change from current settings, including Dark Sky conditions in Driggs, as Palmer's Raceway is located adjacent to the GTR base area, which is already heavily developed and well lit.	views to the west of the SUP area. Visibility of night lighting fixtures would not constitute a considerable change from current settings, including Dark Sky conditions in Driggs, as Palmer's Raceway is located adjacent to the GTR base area, which is already heavily developed and well lit.	(views 3, 4, 6, 7, 20, 21, and 22) views to the west of the SUP area. Visibility of night lighting fixtures would not constitute a considerable change from current settings, including Dark Sky conditions in Driggs, as Palmer's Raceway is located adjacent to the GTR base area, which is already heavily developed and well lit.	of the SUP area. Visibility of night lighting fixtures would not constitute a considerable change from current settings, including Dark Sky conditions in Driggs, as Palmer's Raceway is located adjacent to the GTR base area, which is already heavily developed and well lit.
	<p><i>Quantification of the change in acreage of the existing condition meeting established VQOs from each visual simulation under each Action Alternative.</i></p> <p><i>Qualitative analysis of the existing visual quality of the project area as compared to proposed scenic integrity through application of visual simulations, including</i></p>	<ul style="list-style-type: none"> Under the No Action Alternative there would be no scenery impact to views of the project area from the Town of Driggs, the Grand Teton, Table Mountain, and the Teton Canyon valley floor. 	<ul style="list-style-type: none"> As illustrated in the visual simulation from Table Mountain (view 17), the proposed projects are hardly visible (refer to Figures 11a and 11b), altering approximately 1.3 percent of the overall view. The proposed 	<ul style="list-style-type: none"> As illustrated in the visual simulation from Table Mountain (view 17), the proposed projects are hardly visible (refer to Figures 11a and 11b), altering approximately 1.3 percent of the overall view. 	<ul style="list-style-type: none"> As illustrated in the visual simulation from Table Mountain (view 17), the proposed projects are hardly visible (refer to Figures 11a and 11b), altering approximately 1.3 percent of the overall view. 	<ul style="list-style-type: none"> As illustrated in the visual simulation from Table Mountain (view 17), the proposed projects are hardly visible (refer to Figures 11a and 11b), altering approximately 1.3 percent of the overall view. The proposed South Bowl projects

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>from the Teton Scenic Byway (SH 31 from Swan Valley to Victor; SH 33 from Victor to Teton; SH 32 from Teton to SH 47 at Ashton).</i>		<p>South Bowl projects would introduce form (ski patrol facility), lines (lift line and ski terrain), and color (lift infrastructure and ski terrain) that are not presently common in South Bowl or the characteristic landscape.</p> <ul style="list-style-type: none"> As illustrated in the visual simulation from the Grand Teton Summit (view 5), the proposed projects are hardly visible (refer to Figures 10a and 10b), altering approximately 0.1 percent of the overall view. As illustrated in the visual simulation from the Colter Building Rooftop (view 3), the proposed ski trails and lift corridors would add form, line, and texture to the characteristic landscape, altering approximately 0.4 percent of the overall view. 	<ul style="list-style-type: none"> As illustrated in the visual simulation from the Grand Teton Summit (view 5), the proposed projects are hardly visible (refer to Figures 10a and 10b), altering approximately 0.1 percent of the overall view. As illustrated in the visual simulation from the Colter Building Rooftop (view 3), the proposed ski trails and lift corridors would add form, line, and texture to the characteristic landscape, altering approximately 0.4 percent of the overall view. 	<ul style="list-style-type: none"> As illustrated in the visual simulation from the Grand Teton Summit (view 5), the proposed projects are hardly visible (refer to Figures 10a and 10b), altering approximately 0.1 percent of the overall view. As illustrated in the visual simulation from the Colter Building Rooftop (view 3), the proposed ski trails and lift corridors would add form, line, and texture to the characteristic landscape, altering approximately 0.4 percent of the overall view. 	<p>would introduce form (ski patrol facility), lines (lift line and ski terrain), and color (lift infrastructure and ski terrain) that are not presently common in South Bowl or the characteristic landscape.</p> <ul style="list-style-type: none"> As illustrated in the visual simulation from the Grand Teton Summit (view 5), the proposed projects are hardly visible (refer to Figures 10a and 10b), altering approximately 0.1 percent of the overall view. As illustrated in the visual simulation from the Colter Building Rooftop (view 3), the proposed ski trails and lift corridors would add form, line, and texture to the characteristic landscape, altering

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>and texture to the characteristic landscape, altering approximately 0.4 percent of the overall view.</p> <ul style="list-style-type: none"> As illustrated in the visual simulation prepared for the Teton Canyon Campground, the cat/construction maintenance access route is the most visible project from this viewpoint (refer to Figure 12b); however, the project only alters approximately 0.6 percent of the total view. Visual impacts associated with the proposed South Bowl projects would likely become more apparent in some locations when hiking to and from Teton Canyon Campground 			<p>approximately 0.4 percent of the overall view.</p> <ul style="list-style-type: none"> As illustrated in the visual simulation prepared for the Teton Canyon Campground, the cat/construction maintenance access route is the most visible project from this viewpoint (refer to Figure 12b); however, the project only alters approximately 0.6 percent of the total view. Visual impacts associated with the proposed South Bowl projects would likely become more apparent in some locations when hiking to and from Teton Canyon Campground and Table Mountain.

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			and Table Mountain.			
Noise Construction and operation of the proposed projects could affect noise levels in the study area.	<i>Qualitative discussion of major noise sources, both direct and indirect, and sensitive receptors in the study area and impacts associated to the Action Alternatives.</i>	<ul style="list-style-type: none"> Within the SUP boundary, operation of chairlifts, dining facilities, and general guest activity contribute to typical noise levels at GTR In the base area, people gathering, dining facilities, ticket offices, retail and rental shops, concerts or music, and nearby traffic contribute to noise levels The Jedediah Smith Wilderness (JSW) borders the GTR SUP boundary, and winter and summer operations generate noise that can travel over this shared boundary 	<ul style="list-style-type: none"> In addition to the noise sources discussed in the No Action Alternative, the Proposed Action would have noise sources in the Summer Activity Zone, the Mono Trees area, and South Bowl Additional noise sources include increased guest activity in the Summer Activity Zone, recreation infrastructure and activity in Mono Trees, and recreation activity and infrastructure (such as avalaunchers) in South Bowl Construction of proposed projects would generate an additional noise ranging from diesel trucks to heavy machinery 	<ul style="list-style-type: none"> Major noise sources and sensitive receptors would be the same as the Proposed Action except for the Mono Trees and South Bowl areas 	<ul style="list-style-type: none"> Major noise sources and sensitive receptors would be the same as the Proposed Action except for the Mono Trees area 	<ul style="list-style-type: none"> Major noise sources and sensitive receptors would be the same as the Proposed Action except for the South Bowl area

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			(e.g. helicopter, chainsaws)			
	<i>Qualitative discussion of existing noise levels in the study area and changes incurred as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Existing noise levels range from a quiet rural area (25 to 30 dBA) in undeveloped areas of the terrain network to a level similar to a snowmobile at a distance of 25 feet (100 dBA) in areas where heavy equipment including snowmobiles, snowcats, and chairlifts may dominate the soundscape during operating hours 	<ul style="list-style-type: none"> Noise within and adjacent to the proposed and expanded GTR SUP boundary would be generated from similar sources as the No Action Alternative. Operation of proposed projects are not anticipated to result in considerable increases in noise levels within and adjacent to the GTR SUP area. Construction of the proposed projects would result in a temporary increase in noise levels adjacent to the GTR SUP boundary 			
	<i>Quantitative and qualitative description of potential noise-related impacts associated with construction and operation of the proposed projects (e.g., use of heavy equipment and helicopters for construction, potential use of avalanche mitigation equipment during operation,</i>	<ul style="list-style-type: none"> No projects are proposed under the No Action Alternative, therefore there would be no noise-related impacts as a result of construction and operation of proposed projects 	<ul style="list-style-type: none"> The Proposed Action would cause an incremental increase in noise that would be diluted as a majority of the proposed activities would disperse users throughout the SUP area and are not 	<ul style="list-style-type: none"> Construction and operation impacts would be identical to those described under the Proposed Action, however, would exclude construction and operation impacts described in the Mono Trees and 	<ul style="list-style-type: none"> Construction and operation impacts would be identical to those described under the Proposed Action, however, would exclude construction and operation impacts described in the 	<ul style="list-style-type: none"> Construction and operation impacts would be identical to those described under the Proposed Action, however, would exclude construction and operation impacts described in the South Bowl area

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>traffic-related noise, concert and restaurant noise), including to the adjacent Jedediah Smith Wilderness as compared to existing conditions.</i>		<p>concentrated in areas already characterized by loudness like the base area</p> <ul style="list-style-type: none"> • The extension of the SUP boundary into the Mono Trees area and associated projects that would be constructed in this area would alter the existing soundscape of these NFS lands • The extension of the SUP boundary into the South Bowl area would alter the existing soundscape of these NFS lands to a greater extent than in Mono Trees through the use of avalaunchers for avalanche mitigation, which would create temporary disturbances to the soundscape similar to the 	South Bowl areas	Mono Trees area	

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>noise levels of thunder</p> <ul style="list-style-type: none"> Construction of proposed projects include the use of heavy machinery (such as helicopters) could increase noise levels up to 120 dBA. These impacts would be short-term and would cease upon completion of the project It is likely that with the construction of the Fred's Mountain Top guest facility and avalanche control in South Bowl, there would be impacts to the JSW soundscape in areas of the wilderness proximate to the existing and proposed GTR SUP boundary. However, it is not anticipated that this would measurably 			

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			impact the overall soundscape of the JSW			
Socioeconomics Implementation of the proposed projects could potentially alter certain socioeconomic characteristics of Teton County, Idaho and Teton County, Wyoming due to additional visitation and employees and their impacts within the community.	<i>Quantitative analysis of potential effects to socioeconomic factors in the study area, including: population, employment (part-time seasonal employment vs. full-time equivalents), City/County tax revenue, housing, affordable housing, wages, schools, use of public/social services, public transportation and infrastructure, and visitor spending as compared to existing conditions.</i>	<ul style="list-style-type: none"> • Population: Population growth in each of the study area counties is predicted to continue through 2029 at rates close to 1 percent • Schools, use of public/social services: Demands for human and social services such as schools, emergency services, and public transportation would increase commensurate with the increase in visitors and FTEs projected under each alternative. Impacts would likely be greatest in Teton County, ID as that is where much of the regional workforce related to GTR visitation currently reside. • Public transportation and infrastructure: The road network, transportation system, and other public infrastructure throughout the study area will be utilized by both GTR's new visitors and new residents who move to the study area to fill the FTEs projected under each alternative and are expected to commensurate with the level of increased visitor spending and FTEs projected under each alternative. • Housing, affordable housing: Refer to housing discussion below for housing impacts 				
		<ul style="list-style-type: none"> • An additional 233 FTEs in winter and 35 FTEs in summer • Approximately \$10.3 million in total annual labor income • Approximately \$5 million total annual tax impacts • Approximately \$19.6 million in total annual visitor spending 	<ul style="list-style-type: none"> • An additional 597 FTEs in winter and 108 FTEs in summer • Approximately \$27.5 million in total annual labor income • Approximately \$13.2 million total annual tax impacts • Approximately \$52.5 million in total annual visitor spending 	<ul style="list-style-type: none"> • An additional 327 FTEs in winter and 108 FTEs in summer • Approximately \$16.7 million in total annual labor income • Approximately \$8 million total annual tax impacts • Approximately \$32 million in total annual visitor spending 	<ul style="list-style-type: none"> • An additional 476 FTEs in winter and 108 FTEs in summer • Approximately \$22.7 million in total annual labor income • Approximately \$10.8 million total annual tax impacts • Approximately \$43.4 million in total annual visitor spending 	<ul style="list-style-type: none"> • An additional 444 FTEs in winter and 108 FTEs in summer • Approximately \$21.4 million in total annual labor income • Approximately \$10.3 million total annual tax impacts • Approximately \$40.9 million in total annual visitor spending

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>Qualitative and quantitative discussion of available housing and affordable housing in the study area during both the winter and summer seasons, including designated employee housing and short-term rentals and analysis of expected impacts as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Teton County, ID and Teton County, WY currently experience more severe housing shortages and affordability issues than Madison and Bonneville counties Additional FTEs under all alternatives would contribute to the lack of affordable housing Increased visitation at GTR under all alternatives is likely to increase demand for short-term rentals and vacation homes, further straining housing availability and affordability Under all alternatives, employee housing needs are expected to increase the demand for both public affordable housing and private employee housing units. GTR would need to continue to implement employee housing projects as its staffing needs to grow. 				
	<i>Qualitative and quantitative discussion of county funding and tax revenues in the study area and how they are expected to change or stay the same as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> County tax revenues and funding sources include property taxes, sales and use tax, and federal land payments Federal land payments to counties ranged from approximately \$201,000 to \$2.8 million from the Forest Service, BLM, USFWS Refuse Payments, and Payment in Lieu of Taxes (PILT) County tax revenues range from approximately \$18 to \$106 million in the study area counties County tax revenues remain relatively consistent across the economic impact model for each alternative, with approximately 65 percent of the county tax revenues accruing to Teton County, WY and the remaining 35 percent accruing to the three Idaho counties 				
	<i>Qualitative discussion of the values, beliefs and attitudes about the quality of life within the study area and how they are expected to change or stay the same as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Values, beliefs, and attitudes about the quality of life within the study area included social services, income disparity, affordable housing, and real estate Ambient population growth in the study area will likely have impacts on affordable housing and staffing shortages Visitation growth at GTR may have both positive and detrimental effects to local quality of life, with additional recreation opportunities and new businesses or business types made viable, along with challenges around the elements listed above 				
Traffic and Parking The action alternatives may generate additional	<i>Quantification of baseline and estimated traffic volumes under the action alternatives in the study area as related to GTR's</i>	<ul style="list-style-type: none"> On a winter CCC day, there would be an estimated 1,660 vehicles seeking to access the 	<ul style="list-style-type: none"> Under the Proposed Action, there would be 2,790 vehicles seeking to access the resort 	<ul style="list-style-type: none"> Under Alternative 3, there would be 2,210 vehicles seeking to access the resort on a winter CCC 	<ul style="list-style-type: none"> Under Alternative 4, there would be 2,480 vehicles seeking to access the 	<ul style="list-style-type: none"> Under Alternative 5, there would be 2,540 vehicles seeking to access the resort on a winter CCC day,

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
daily/seasonal visitation, thereby affecting traffic and parking within the study area.	<i>operations, during winter and summer months including estimated traffic generated by timber removal and construction activities.</i>	<p>resort, resulting in 3,320 total vehicle trips (two-way).</p> <ul style="list-style-type: none"> • Summer visitation is expected to increase to 1,010 guests per busy day from existing conditions in summer 2033 (26 percent increase) as the parking and other facilities have additional capacity to allow busy day visitation to continue to grow in the summer. Summer busy day traffic volumes are anticipated to increase to 620 vehicles accessing the resort (1,240 vehicle trips two-way). • Traffic conditions vary throughout the study area and by time of year. There are potential declines in vehicle speed or delays at the 	<p>on a winter CCC day, 1,130 additional vehicles when compared to 1,660 under the no action alternative (when the CCC is 3,720)</p> <ul style="list-style-type: none"> • On a summer busy day, there would be 960 vehicles accessing the resort, which is 340 vehicles beyond the forecast for the No Action Alternative. • Potential increases in busy day visitation in the winter results in a 1 to 68 percent increase in traffic volume on the roads accessing the resort, with the highest increase at the resort entrance and on Ski Hill Road in Driggs, at or below 8 percent for all other roadways, and the lowest percent increase 	<p>day, 550 additional vehicles when compared to the existing condition and no action alternative</p> <ul style="list-style-type: none"> • Potential increases in busy day visitation in the winter results in a 1 to 33 percent increase in traffic volume on the roads accessing the resort, with the highest increase at the resort entrance and on Ski Hill Road in Driggs and at or below 4 percent for all other roadways, with the lowest increase on SH 31. • Potential increases in summer busy day traffic volumes would be the same as described under the proposed action. • Similar to the proposed action, proposed 	<p>resort on a winter CCC day, 820 additional vehicles when compared to the existing condition and no action alternative</p> <ul style="list-style-type: none"> • Potential increases in busy day visitation results in a 1 to 49 percent increase in traffic volume on the roads accessing the resort, with the highest percent increase at the resort entrance and on Ski Hill Road in Driggs, at or below 5 percent for all other roadways, and the lowest increase on SH 31. • Potential increases in summer busy day traffic volumes would be the same as described under 	<p>880 additional vehicles when compared to the existing condition and no action alternative</p> <ul style="list-style-type: none"> • Potential increases in summer busy day traffic volumes would be the same as described under the proposed action. • Similar to the proposed action, proposed projects under Alternative 5 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days • Under Alternative 5, 2,699 truck trips are anticipated for tree removal from GTR. An additional 8,000

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		<p>resort entrance on winter CCC days, and on SH 33 south of Driggs and Victor on busy summer Saturdays, and on WY-22 during all periods</p> <ul style="list-style-type: none"> Under the No Action Alternative, roadways included in the analysis are expected to decrease by a half or whole LOS grade from existing conditions except for Ski Hill Road at GTR by the 2032/2033 season There would be no traffic generated by timber removal and construction activities because the proposed projects would not be constructed under Alternative 1 	<p>on SH 31 at Swan Valley</p> <ul style="list-style-type: none"> Potential increases in summer busy day visitation results in a 0.4 to 54 percent increase in traffic volume on the roads accessing the resort, with the highest increase at the resort entrance, 7 percent for Ski Hill Road in Driggs, and at or below 2 percent for all other counters No change in LOS is anticipated for roadways other than at the resort entrance associated with the implementation of the Proposed Action. GTR would need to continue to employ a variety of strategies to manage transportation demand. 	<p>projects under Alternative 3 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days</p> <ul style="list-style-type: none"> Under Alternative 3, 1,718 truck trips are anticipated for tree removal from GTR. An additional 5,000 truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 6,718 truck trips. The construction of proposed infrastructure included in the alternative is planned to take place over 5-7 years. This likely 	<p>the proposed action</p> <ul style="list-style-type: none"> Similar to the proposed action, proposed projects under Alternative 4 could increase the number of vehicles traveling on roadways accessing GTR; therefore, implementation of the action alternatives could contribute to the back-up in Driggs and at the resort on busy days Under Alternative 4, 1,953 truck trips are anticipated for tree removal from GTR. An additional 8,000 truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 9,953 truck trips. The 	<p>truck trips are anticipated for construction and staging of projects (non-tree removal), for a total of 10,699 truck trips. The construction of proposed infrastructure included in the alternative is planned to take place over 6-8 years. This likely results in 10-20 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.</p>

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<ul style="list-style-type: none"> Under this alternative, 2,933 truck trips are anticipated for tree removal from GTR. An additional 10,000 truck trips are anticipated for construction and staging of projects (non-tree removal). The construction of proposed infrastructure included in the alternative is planned to take place over the 10-year summer construction period. This likely results in 10-20 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present and resulting in 	<p>results in 10-15 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.</p>	<p>construction of proposed infrastructure included in the alternative is planned to take place over 6-8 years. This likely results in 10-20 timber and other construction trips per day on average during the summer. The trips would be a temporary increase to traffic, during the summer when winter ski traffic is not present, and therefore, the impacts to roadway traffic would be minor.</p>	

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			minor impacts to the roadways.			
	<i>Qualitative and quantitative discussion of existing parking as compared to the expected need of parking under the Action Alternatives to determine if existing available parking is sufficient to service parking needs associated with implementation of the action alternatives. Including discussion of the potential need for offsite parking and an expanded shuttle service to accommodate existing and proposed parking demand. The analysis would rely upon existing parking data collected/maintained by GTR.</i>	<ul style="list-style-type: none"> GTR has four parking lots for public skier use. There are approximately 1,455 parking spaces in the winter when snow storage is occurring. During the summer, an estimated 70 additional parking spaces are available. On winter days when visitation is at CCC, a small surplus of 30 spaces is anticipated on days when visitation approximates CCC in the winter, forecasted for the 2032/33 season During the summer, there would be a strong surplus of available parking spaces even for the busier days 	<ul style="list-style-type: none"> Under the Proposed Action, an additional 957 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,382 vehicles on a day when visitation is at the CCC (6,170 guests). This would create a deficit of 927 spaces with 1,455 spaces available. During the summer, an additional 333 vehicles would seek to park at one time at the resort on a busy summer day. There would still be a strong 	<ul style="list-style-type: none"> Under Alternative 3, an additional 452 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 1,877 vehicles on a day when visitation is at the CCC (4,910 guests). This would create a deficit of 422 spaces with 1,455 spaces available. Summer conditions would be the same as described under the proposed action 	<ul style="list-style-type: none"> Under Alternative 4, an additional 684 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,109 vehicles on a day when visitation is at the CCC (5,480 guests). This would create a deficit of 654 spaces with 1,455 spaces available. Summer conditions would be the same as described under the proposed action 	<ul style="list-style-type: none"> Under Alternative 5, an additional 744 vehicles would seek to park at one time at the resort on a winter CCC day, beyond the number seeking to do so under the No Action Alternative. This results in a total at-one-time parking demand of 2,169 vehicles on a day when visitation is at the CCC (4,910 guests). This would create a deficit of 714 spaces with 1,455 spaces available. Summer conditions would be the same as described under the proposed action

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			surplus of available parking spaces (572) under the existing supply of parking in the summer.			
Cultural Resources Construction of the proposed projects and associated ground disturbance both within existing SUP area and the proposed SUP expansion area, may affect previously unidentified cultural and heritage resources in the Area of Potential Effect (APE).	<i>Documentation of the presence (or absence) of identified cultural/heritage resources within the APE including a qualitative discussion of expected impacts as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> The cultural resource Class III inventory covered 1,586 acres, and resulted in the recordation of 11 cultural resources, including 10 sites (eight historic and two precontact) and one precontact isolated find within the APE. Historic resources include a mid-20th century automobile road (the original and still operable entry road to GTR); a hiking trail; GTR Original Ski Area Buildings; and EuroAmerican Historic arborglyphs. 	<ul style="list-style-type: none"> Impacts would be the same as the No Action Alternative, as well as the potential impact to several sites specifically in the Mono Trees Area, including sites containing arborglyphs and sites that are recommended uneligible and unevaluated for the National Register. 	<ul style="list-style-type: none"> Impacts would be the same as under the No Action Alternative 	<ul style="list-style-type: none"> Impacts would be the same as the No Action Alternative, as well as impacts to a historic trail within the South Bowl Area. 	<ul style="list-style-type: none"> Impacts would be the same as the Proposed Action, with the exception of impacts to the historic trail in the South Bowl Area.

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		Specifically, the Sioux Lodge, East Alta Ski Hill Road, and the Nature Center are all eligible for the National Register. It is recommended that a lithic scatter site has further testing before development occurs to determine eligibility.				
	<i>Documentation of impacts to any eligible National Register of Historic Places (NRHP) sites including a qualitative discussion of expected impacts as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Under the No Action Alternative, activities at GTR would essentially be a continuation of existing conditions. No new development projects either within GTR's existing or proposed SUP expansion area would occur. Therefore, the implementation of the No Action Alternative would not change or 	<ul style="list-style-type: none"> Under all Action Alternatives, there would be no impacts to eligible NRHP sites including the Sioux Lodge, East Alta Ski Hill Road, or the Nature Center. Although no eligible NRHP sites would be impacted, it is recommended that a lithic scatter site located within the Mono Trees SUP expansion area has further testing done to determine eligibility. Several non-eligible sites are impacted by the Action Alternatives, please refer to Section 3.6 – Cultural Resources for more information. 			

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		alter the significant characteristics of or the integrity of cultural resources within the project area.				
Public Safety Implementation of proposed projects could affect public safety in the study area by altering avalanche mitigation protocols.	<i>Description of the existing level of avalanche danger and avalanche mitigation protocols in the South Bowl area based on existing data, including discussion of the role of solar aspects in avalanche danger and comparison of changes to the level of avalanche danger and avalanche mitigation protocols under the Action Alternatives.</i>	<ul style="list-style-type: none">• In the northern hemisphere, north- and east-facing slopes receive less solar exposure than south- and west-facing slopes and are more prone to slab avalanches due to weaker slab layers beneath the surface• Slopes between 30 and 45 degrees and above are most prone to avalanches, particularly if there are buried weak layers in the snowpack• The GTR SUP area exists primarily on a west-facing slope. The area has steep terrain prone to avalanches, however, ski patrol management and monitoring efforts mitigate avalanche risks to skiers in the resort• The South Bowl area has a south-facing aspect and slopes that range from 30 to over 60 degrees. It is prone to avalanches due to its steep slope and snow cover• The existing Mono Trees has low avalanche risk and is not a popular backcountry skiing area				
		<ul style="list-style-type: none">• Under the No Action Alternative, South Bowl would not be included in the ski area boundary, and the same risks would persist in the area• It is anticipated that as participation in backcountry recreation continues to grow, additional guests of GTR would venture	<ul style="list-style-type: none">• Under Alternative 2, incorporating South Bowl into the GTR SUP boundary would significantly reduce avalanche risk to skiers in the area and would allow more skiers to utilize the unique terrain in South Bowl without as great of a risk• With the incorporation of South Bowl and Mono Trees	<ul style="list-style-type: none">• Under Alternative 3, South Bowl would not be included in the ski area boundary, and the same risks would persist in the area• It is anticipated that as participation in backcountry recreation continues to grow, addition guests of GTR would venture into South Bowl	<ul style="list-style-type: none">• Under Alternative 4, South Bowl would be included in the GTR SUP boundary. This would significantly reduce avalanche risk to skiers in the area and would allow more skiers to utilize the unique terrain in South Bowl without as great of a risk	<ul style="list-style-type: none">• Under Alternative 5, South Bowl would not be included in the ski area boundary, and the same risks would persist in the area• With the incorporation of the Mono Trees area into the GTR SUP boundary, ski patrol operations would expand 600 acres to include this terrain but would

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		into South Bowl from the gates on Peaked Mountain, which may result in increased avalanche accidents and injuries	<p>areas into the GTR SUP boundary, ski patrol operations would expand 866 acres to include these areas</p> <ul style="list-style-type: none"> The Proposed Action includes the construction of an additional ski patrol facility located at the top of the South Bowl lift to serve the area Safety practices to mitigate avalanche terrain in the South Bowl area would include the use of avalaunchers to disrupt unstable snowpack, bootpacking applicable terrain, adding two rescue caches, providing adequate signage to inform users of avalanche hazards, and the use of machinery 	from the gates on Peaked Mountain, which may result in increased avalanche accidents and injuries	<ul style="list-style-type: none"> With the incorporation of the South Bowl area into the GTR SUP boundary, ski patrol operations would expand 266 acres to include this area Refer to discussion under Alternative 2 for a description of changes to avalanche danger and mitigation protocols 	<p>not include South Bowl terrain</p> <ul style="list-style-type: none"> It is anticipated that as participation in backcountry recreation continues to grow, addition guests of GTR would venture into South Bowl from the gates on Peaked Mountain, which may result in increased avalanche accidents and injuries

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			<p>such as winch snow cats to pack and groom the snow</p> <ul style="list-style-type: none"> The Proposed Action also includes the installation of two avalaunchers and a bomb cache at the base of the South Bowl lift, two rescue caches within the South Bowl area, and one rescue cache outside of the existing and proposed SUP boundaries to help search and rescue efforts 			
	<p><i>Discussion of potential changes in demand on emergency service providers resulting from potential expansion in South Bowl and Mono Trees (in response to concerns from the Sheriff's department about the displacement of users into new and more distant areas beyond the existing operational boundary).</i></p>	<ul style="list-style-type: none"> Ski patrol facilities and the extent of their operations would largely remain the same as existing conditions It is likely that the anticipated increase in backcountry use in South Bowl would increase the strain on TCSAR and 	<ul style="list-style-type: none"> The proposed South Bowl area that would be incorporated into the GTR SUP boundary under Alternative 2 would be managed primarily by GTR ski patrol and would largely reduce the needs of emergency 	<ul style="list-style-type: none"> Similar to the No Action Alternative, it is likely that the anticipated increase in backcountry use in South Bowl would increase the strain on TCSAR and Teton County, ID Fire and Rescue Due to the proposed 	<ul style="list-style-type: none"> Changes in demand on emergency service providers would be nearly the same as that described under Alternative 2 	<ul style="list-style-type: none"> Changes in demand on emergency service providers would be nearly the same as that described under Alternative 3

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		Teton County, ID Fire and Rescue. These services may need to respond to more backcountry incidents in South Bowl as participation in backcountry recreation increases commensurate with existing trends	<p>services in South Bowl as a whole</p> <ul style="list-style-type: none"> Alternative 2 could also contribute to challenges for emergency services by: increasing the ease of access into adjacent backcountry areas, displacing skiers who currently frequent the South Bowl area, and increasing guest capacity at the resort The impacts listed above may require emergency response in areas farther from the resort and increase the need for services in the area as well 	<p>projects under Alternative 3, there would be a greater increase in guest capacity at GTR than in the No Action Alternative which may increase the number of guests accessing adjacent backcountry terrain, creating additional challenges for emergency services</p> <ul style="list-style-type: none"> It is anticipated that ski patrol operations would more frequently need to extend to adjacent backcountry to support local emergency services as participation in backcountry recreation increases consistent with current trends 		
Wilderness Implementation of the proposed	<i>Qualitative analysis of potential impacts of the proposed projects on the wilderness character</i>	<ul style="list-style-type: none"> Ambient visitation growth consistent with ski industry 	<ul style="list-style-type: none"> An increase in access to the JSW is expected 	<ul style="list-style-type: none"> Alternative 3 would have similar impacts as Alternative 2; 	<ul style="list-style-type: none"> Alternative 4 would have similar impacts as Alternative 2. 	<ul style="list-style-type: none"> Alternative 5 would have similar impacts as Alternative 2, but

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
projects could impact the Jedediah Smith Wilderness.	<i>and wilderness characteristics (untrammelled; natural; undeveloped; outstanding opportunities for solitude or a primitive and unconfined type of recreation) of the Jedediah Smith Wilderness. Discuss particularly visual impacts, increased access and use, construction (including increased noise) and avalanche mitigation.</i>	<p>trends is anticipated</p> <ul style="list-style-type: none"> • Avalaunchers currently create noise that ranges from a quiet rural area to a snowmobile at a distance of 25 feet (100 dBA) • There would be no effect on the wilderness characteristics of untrammelled, undeveloped, natural, or opportunities for solitude or primitive and unconfined recreation 	<p>during the non-winter months</p> <ul style="list-style-type: none"> • Avalaunchers would create short-term disturbances to the soundscape of the JSW that would resemble a range from noise level of a quiet rural area (24 to 20 dBA) to thunder (120 dBA) • The use of helicopters and chainsaws to construct the project could impact the soundscape of the JSW in the short-term, with noise ranging from 80 dBA to 120 dBA • There would be minorly adverse impacts on the untrammelled characteristic as there is a possibility of increased use in both the winter and summer as the proposed lifts 	<p>however, to a lesser extent as no SUP expansions are included</p> <ul style="list-style-type: none"> • Alternative 3 would have similar impacts to wilderness characteristics untrammelled and undeveloped. However, could have a similar but lesser effect on natural and opportunities for solitude or primitive and unconfined type of recreation as projects would just occur within the existing SUP and South Bowl and Mono Trees would not be expanded. 		<p>to a lesser extent, due to no South Bowl expansion. Specifically, there would be no effect to the natural characteristic of the JSW as Mono Trees is spatially separated from the JSW.</p>

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>and Fred's Mountain Top Guest Facility provide proximal access to the JSW</p> <ul style="list-style-type: none"> • There would be no effect on the undeveloped characteristic • There would be minorly adverse impacts on the natural characteristic as Alternative 2 has the potential to directly and indirectly impact both grizzly bear and bighorn sheep habitat. • There would be short-term and long-term minorly adverse impacts on opportunities for solitude or primitive and unconfined type of Recreation as the soundscape of the JSW would be impacted from construction and operations. 			

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			<p>Long-term impacts from operation of Fred's Mountain Top Guest Facility, Dreamcatcher lift, South Bowl lift, Crazy Horse lift, and mountain biking trails may create minorly adverse visual impacts for users of the JSW as facilities and operations, towers, and chairs would be visible from Mary's Saddle trail and the northeast side of Fred's Mountain.</p> <ul style="list-style-type: none"> PDC would be incorporated to mitigate impacts to the JSW, like prohibiting overnight backpacks on lifts that provide access to the JSW. 			
Livestock and Grazing	<i>Identification of the relevant grazing allotment units in the study area: Leigh Creek</i>	<ul style="list-style-type: none"> The Mill Creek/Teton Allotment intersects the existing GTR SUP boundary and the proposed South Bowl and Mono Trees areas. All other nearby allotments would not be impacted by the proposed projects. 				

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The proposed projects could potentially alter grazing allotment units within the area of the proposed SUP expansion.	<i>and Mill/Teton allotments; Fred's Mountain and Mill Creek pastures.</i>					
	<i>Narrative description of existing grazing patterns within and around GTR's proposed SUP area.</i>	<ul style="list-style-type: none"> • The Mill Creek/Teton Allotment allows grazing between June and September with a three-pasture rotation • Only summer operations create opportunities for direct interactions between recreationists and livestock; a cattleguard is maintained by permittees and GTR in order to reduce conflict 				
	<i>Qualitative analysis of potential changes to grazing patterns in the area of the proposed SUP expansion, and identification of potential conflict between permit holders in the study area.</i>	<ul style="list-style-type: none"> • Existing livestock grazing permits and permittees and allotments would not change. Land uses authorized to these permittees would be subject to Forest Service terms and both permittees would continue to work out management strategies that best suit the coexistence of both land uses. 	<ul style="list-style-type: none"> • The SUP expansion into Mono Trees and South Bowl would increase the area in which the Mill Creek/Teton Allotment intersects with the resort boundary • Livestock and grazing would be impacted through the densification of summer recreational opportunities that would occur under the Proposed Action as there would be a higher likelihood for direct interactions between 	<ul style="list-style-type: none"> • Alternative 3 does not include an expansion to the SUP boundary • Livestock and grazing impacts would be identical to those in the Proposed Action except for the impacts from construction and operations in Mono Trees and South Bowl 	<ul style="list-style-type: none"> • The SUP expansion into South Bowl would increase the area in which the Mill Creek/Teton Allotment intersects with the resort boundary • Livestock and grazing impacts would be identical to those in the Proposed Action except for the impacts from construction and operations in Mono Trees 	<ul style="list-style-type: none"> • The SUP expansion into Mono Trees would increase the area in which the Mill Creek/Teton Allotment intersects with the resort boundary • Livestock and grazing impacts would be identical to those in the Proposed Action except for the impacts from construction and operations in South Bowl

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			<p>recreationists or summer maintenance crews and livestock</p> <ul style="list-style-type: none"> • Development of ski terrain, roads, and trails may change the vegetation and create routes that are attractive to livestock, primarily in the Mono Trees area • An increase in visitor traffic on Ski Hill Road, which is within the Mill Creek / Teton allotment and is often crossed by grazing cattle, may have an impact on livestock and grazing patterns and feasibility • Construction activity as a result of proposed projects, specifically in the Mono Trees and South Bowl 			

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>areas, would temporarily impact livestock and grazing permittees and could change grazing patterns while it occurs</p> <ul style="list-style-type: none"> Project Design Criteria has been added to address potential conflict between GTR and livestock and grazing permittees 			
Air Quality Construction and operation of the proposed projects (including short-term construction-related activity, burning, and transportation related to timber removal) could result in localized impacts to air quality.	<i>Narrative description of existing air quality in the study area, including population centers and Class I and Class II airsheds in the vicinity and associated impacts as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Population centers in the vicinity of the study area are Jackson, WY (25 miles) and Idaho Falls, ID (60 miles) Class I airsheds in the vicinity of the study area are Grand Teton National Park (3.5 miles), Yellowstone National Park (20 miles), Teton Wilderness (20 miles), Washakie Wilderness (55 miles), Bridger Wilderness (60 miles), Fitzpatrick Wilderness (60 miles), and the North Absaroka Wilderness (60 miles) Class II airsheds in the vicinity of the study area are the Jedediah Smith Wilderness (bordering SUP boundary) and the Gros Ventre Wilderness (20 miles) In the last 10 years, the air quality index (AQI) in Jackson, WY and Idaho Falls, ID has been primarily “good” to “moderate” with rare events of “unhealthy” days that are likely attributable to wildfire smoke. SO₂, PM₁₀, and PM_{2.5} measurements in population centers have remained below NAAQS between 2019-2021 except for two wildfire events in the summers of 2020 and 2021, which caused spikes in PM_{2.5} concentrations. NO₂, CO, PM₁₀, PM_{2.5}, and ozone in Grand Teton National Park and Yellowstone National Park have remained below NAAQS values between 2019-2021 GTR power is primarily driven by renewable sources, thus does not measurably contribute to the emission of CO₂ and CH₄ All Action Alternatives are anticipated to have little or negligible impact on air quality in the region, are not likely to increase emissions above NAAQS, and only result in negligible impacts to emissions 				

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	<i>Estimated daily increase in vehicle miles associated with the estimated increase in annual visitation.</i>	<ul style="list-style-type: none"> Vehicle miles were calculated based on the visitor origin data, lodging occupancy and location, transit ridership, and estimated average vehicle occupancy (2.5 guests/vehicle) It was estimated that the average winter visitor travels over 60 miles per ski day; the average summer visitor travels almost 80 miles per day Under the No Action Alternative, winter visitation is expected to increase by 225 people per day on average and summer visitation is expected to increase by 100 people per day on average, when compared to the existing condition 	<ul style="list-style-type: none"> The Proposed Action is estimated to generate approximately an additional 800 visitors on average per day during the winter season and an additional 450 on average during the summer season, when compared to the existing condition Average vehicle miles per skier visit is anticipated to increase slightly to reflect more visitors coming from further away. Total vehicle miles on an average winter day would increase by approximately 59,000 from the existing condition; on an average summer day, vehicle miles traveled would increase by approximately 	<ul style="list-style-type: none"> Under Alternative 3, it is anticipated that winter visitation would increase by approximately 380 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away Total vehicle miles on an average winter day under Alternative 3 would increase by approximately 27,000 from the existing condition; average summer 	<ul style="list-style-type: none"> Under Alternative 4, it is anticipated that winter visitation would increase by approximately 600 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away Total vehicle miles on an average winter day under Alternative 4 would increase by approximately 	<ul style="list-style-type: none"> Under Alternative 5, it is anticipated that winter visitation would increase by approximately 550 people per average day and summer visitation would increase by 450 people per day on average (same as Proposed Action), compared to the existing condition Average vehicle miles per skier visit is anticipated to increase slightly from existing conditions to reflect more visitors coming from further away. Total vehicle miles on an average winter day under Alternative 5 would increase by approximately 41,000 from the existing condition; average summer day miles are estimated to be

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		<ul style="list-style-type: none"> Total vehicle miles on an average winter day under the No Action Alternative would increase by approximately 16,000 from the existing condition; on an average summer day, vehicle miles traveled would increase by approximately 7,000 from the existing condition 	34,000 from the existing condition	day miles are estimated to be approximately the same as the Proposed Action	45,000 from the existing condition; average summer day miles are estimated to be approximately the same as the Proposed Action	approximately the same as the Proposed Action
	<i>Narrative discussion of timber removal techniques (e.g., burning) and their potential effect on air quality in the region under existing conditions and as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> The No Action Alternative would not include timber removal and thus would not contribute to air quality impacts as a result of timber removal 	<ul style="list-style-type: none"> In gladed ski areas that require tree removal, trees would either be removed over the snow and using mountain road networks or hand cut, piled, and burned Burning would result in the short-term release of pollutant emissions, limited to the duration of the burn itself and is unlikely to result in regional or 	<ul style="list-style-type: none"> Refer to the discussion under the proposed action on the impacts resulting from timber removal techniques 	<ul style="list-style-type: none"> Refer to the discussion under the proposed action on the impacts resulting from timber removal techniques 	<ul style="list-style-type: none"> Refer to the discussion under the proposed action on the impacts resulting from timber removal techniques

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			Class I or II areas air quality degradation <ul style="list-style-type: none"> Some tree removal methods (i.e. use of heavy machinery and logging trucks) would generate temporary pollutant emissions during construction. These emissions are included in the construction impacts quantitative analysis 			
	<i>Quantitative analysis of short- and long-term emissions due to construction and operation of the projects.</i>	<ul style="list-style-type: none"> Without construction of proposed projects, heavy machinery and additional construction vehicles at GTR would not be used and would not generate emissions contributing to air quality. Activity at the ski area in the long-term, such as visitor traffic/emissions, 	<ul style="list-style-type: none"> Construction would require the use of trucks and heavy machinery for tree removal, construction, staging, and installation of proposed infrastructure Combined impacts from on-road and off-road construction activity would result in temporary impacts to air quality, 	<ul style="list-style-type: none"> Construction would require the use of trucks and heavy machinery for tree removal, construction, staging, and installation of proposed infrastructure Combined impacts from on-road and off-road construction activity would result in temporary impacts to air quality, 	<ul style="list-style-type: none"> Construction would require the use of trucks and heavy machinery for tree removal, construction, staging, and installation of proposed infrastructure Combined impacts from on-road and off-road construction activity would result in 	<ul style="list-style-type: none"> Construction would require the use of trucks and heavy machinery for tree removal, construction, staging, and installation of proposed infrastructure Combined impacts from on-road and off-road construction activity would result in temporary impacts to air quality,

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		<p>is expected to increase in coming years, resulting in increases in CO, NOx, and CO₂ emissions from vehicles</p> <ul style="list-style-type: none"> • CO₂ emissions as a result of the No Action Alternative would increase by approximately 8 tons per day in the winter and 3.5 tons in the summer • Increases in CO₂ emissions would contribute to an increase of less than 0.1 percent of highway vehicle and CO₂ and CH₄ emissions in the transportation sector in Wyoming, which is not likely to produce emissions that would increase concentrations above NAAQS 	<p>generating small amounts of CO and NOx (approximately 22 and 14 lbs per day, respectively) and approximately 2.5 tons of CO₂ daily</p> <ul style="list-style-type: none"> • Emissions of NAAQ pollutants as a result of construction activity would contribute to a negligible increase in off-highway vehicle emissions in Wyoming (0.1 percent or less) which are not likely to result in pollutant levels above the NAAQs • CO₂ and CH₄ emissions would contribute an increase of 0.1 percent or less of transportation emissions in Wyoming, which is not anticipated to contribute to a degradation of 	<p>generating small amounts of CO and NOx (approximately 13 and 8 lbs per day, respectively) and approximately 1.5 tons of CO₂ daily</p> <ul style="list-style-type: none"> • Similar to the proposed action, emissions of NAAQ pollutants and CO₂ and CH₄ as a result of construction activity would contribute to a negligible increase in off-highway vehicle emissions in Wyoming (less than 0.1 percent) and overall transportation CO₂ and CH₄ emissions in Wyoming (less than 0.1 percent) • Vehicular traffic due to an increase in visitation would be the primary contributor to air quality as a result of 	<p>temporary impacts to air quality, generating small amounts of CO and NOx (approximately 17 and 11 lbs per day, respectively) and approximately 2 tons of CO₂ daily</p> <ul style="list-style-type: none"> • Similar to the proposed action, emissions of NAAQ pollutants and CO₂ and CH₄ as a result of construction activity would contribute to a negligible increase in off-highway vehicle emissions in Wyoming (less than 0.1 percent) and overall transportation CO₂ and CH₄ emissions in Wyoming (less than 0.1 percent) 	<p>generating small amounts of CO and NOx (approximately 17 and 11 lbs per day, respectively) and approximately 2 tons of CO₂ daily</p> <ul style="list-style-type: none"> • Similar to the proposed action, emissions of NAAQ pollutants and CO₂ and CH₄ as a result of construction activity would contribute to a negligible increase in off-highway vehicle emissions in Wyoming (less than 0.1 percent) and overall transportation CO₂ and CH₄ emissions in Wyoming (less than 0.1 percent) • Vehicular traffic due to an increase in visitation would be the primary contributor to air quality as a result of operations under Alternative

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>air quality in the state or area</p> <ul style="list-style-type: none"> • Vehicular traffic due to an increase in visitation would be the primary contributor to air quality as a result of operations under the proposed action • NAAQ pollutant emissions as a result of visitor vehicular traffic would contribute to an increase of less than 0.2 percent of highway vehicle emissions in Wyoming • CO₂ and CH₄ emissions as a result of winter visitor vehicle traffic is expected to produce approximately 30 tons of CO₂ daily, which would contribute to an increase of less than 0.2 percent in daily 	<p>operations under Alternative 3, though at a lesser rate than in the proposed action</p> <ul style="list-style-type: none"> • NAAQ pollutant emissions as a result of visitor vehicular traffic would contribute to an increase of 0.1 or less percent of highway vehicle emissions in Wyoming • CO₂ and CH₄ emissions as a result of winter visitor vehicle traffic is expected to produce approximately 14 tons of CO₂ daily, which would contribute to an increase of less than 0.1 percent in daily CO₂ emissions in the transportation sector in Wyoming • The increase in CO₂ and CH₄ 	<ul style="list-style-type: none"> • Vehicular traffic due to an increase in visitation would be the primary contributor to air quality as a result of operations under Alternative 4, though at a lesser rate than in the proposed action • NAAQ pollutant emissions as a result of visitor vehicular traffic would contribute to an increase of 0.1 or less percent of highway vehicle emissions in Wyoming. • CO₂ and CH₄ emissions as a result of winter visitor vehicle traffic is expected to produce approximately 23 tons of CO₂ daily, which would contribute to an 	<p>5, though at a lesser rate than in the proposed action</p> <ul style="list-style-type: none"> • NAAQ pollutant emissions as a result of visitor vehicular traffic would contribute to an increase of 0.1 or less percent of highway vehicle emissions in Wyoming • CO₂ and CH₄ emissions as a result of winter visitor vehicle traffic is expected to produce approximately 21 tons of CO₂ daily, which would contribute to an increase of approximately 0.1 percent in daily CO₂ emissions in the transportation sector in Wyoming • The increase in CO₂ and CH₄ emissions as a result of Alternative 5 has the potential to

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			<p>CO₂ emissions in the transportation sector in Wyoming</p> <ul style="list-style-type: none"> The increase in CO₂ and CH₄ emissions as a result of the proposed action has the potential to impact air quality, however, the scale of the projects and their impacts on CO₂ and CH₄ emissions is not anticipated to considerably affect air quality in the area 	<p>emissions as a result of Alternative 3 has the potential to impact air quality, however, the scale of the projects and their impacts on CO₂ and CH₄ emissions is not anticipated to considerably affect air quality in the area</p>	<p>increase of approximately 0.1 percent in daily CO₂ emissions in the transportation sector in Wyoming</p> <ul style="list-style-type: none"> The increase in CO₂ and CH₄ emissions as a result of Alternative 4 has the potential to impact air quality, however, the scale of the projects and their impacts on CO₂ and CH₄ emissions is not anticipated to considerably affect air quality in the area 	<p>impact air quality, however, the scale of the projects and their impacts on CO₂ and CH₄ emissions is not anticipated to considerably affect air quality in the area</p>
<p>Climate Change</p> <p>Construction and operation of the proposed projects (including short-term construction-related activity, burning, and transportation related to timber</p>	<p><i>Quantitative analysis of the potential contributions to climate change of short- and long-term emissions associated with construction and operation of the project (to be captured in the Air Quality analysis and referenced as needed)</i></p>	<ul style="list-style-type: none"> The impact of the activities at GTR such as visitor traffic/emissions, maintenance and operations, and water use to climate change would resemble current trends. No additional 	<ul style="list-style-type: none"> Construction emissions are expected to be very small, only occurring in the short term until the projects are completed Increase in visitation and vehicular traffic 	<ul style="list-style-type: none"> Effects would be similar to Alternative 2, but a slightly lesser effect overall. 	<ul style="list-style-type: none"> Effects are similar; however, Alternative 4 would have more effect as compared to Alternative 3, but a lesser effect as 	<ul style="list-style-type: none"> Effects would be similar to Alternative 4, with less of an effect as compared to Alternative

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removal) would result in CO ₂ and CH ₄ emissions. In addition, climate change has the potential to impact operation of the proposed projects.		effects to emissions would occur	<p>would have a long-term measurable impact on CO, NO_x, and CO₂, but would be less than 0.5 percent increase as compared to statewide emissions</p> <ul style="list-style-type: none"> Emissions from operations and summer visitation are not expected to generate substantial CO₂ and CH₄ emissions 		compared to Alternative 2	
	<i>Qualitative discussion of the impact of climate change on the operations of GTR and the proposed projects (in particular, the global warming trend could create operational difficulties for south-facing slopes and lower elevation ski terrain).</i>	<ul style="list-style-type: none"> Effects of climate change on operations at GTR would be consistent with current trends GTR could experience changes in winter and summer temperatures; the timing and amount of precipitation that falls as snow; and the timing and duration of the winter season and snowmelt/runoff due to climate change Current climate induced effects could continue and could affect snowmaking, visibility, visitation, and operations 				

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Wildlife and Fish Implementation of the action alternatives could affect individuals, populations, and/or habitat values for federally-listed proposed, threatened, or endangered and/or Forest Service Region 4 sensitive (PTES) fish and wildlife species, migratory birds, and SOLC.	<i>Qualitative discussion of the presence/absence of federally listed and/or sensitive wildlife and fish species, migratory birds and SOLC in the study area, as well as species with the potential to occur in the study area and potential impacts on these species as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Table 3.13-1 describes the threatened, endangered, proposed, and candidate wildlife species with potential for habitat within the project area Table 3.13-2 describes the Region 4 sensitive species with potential habitat in the project area Existing habitat for SOLC species and migratory birds with potential to overlap the project area is included under their respective subheadings within Section 3.13.3 of the Draft EIS 				
		<ul style="list-style-type: none"> May affect, but is not likely to adversely affect determination for Canada lynx, wolverine, and grizzly bear Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat determination for Monarch butterfly May impact individuals or their habitat, but would not likely contribute to a trend toward federal listing or loss of population viability 	<ul style="list-style-type: none"> Impacts are the same as the No Action Alternative except for the following: Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat determination for monarch butterfly May affect, but is not likely to adversely affect determination for Canada Lynx May affect, and is likely to adversely affect determination for grizzly bear and wolverine 	<ul style="list-style-type: none"> Impacts are the same as the No Action Alternative except for the following: Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat determination for monarch butterfly May affect, but is not likely to adversely affect determination for Canada Lynx and wolverine May affect, and is likely to adversely affect determination for grizzly bear 	<ul style="list-style-type: none"> Impacts are the same as the No Action Alternative except for the following: Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat determination for monarch butterfly May affect, but is not likely to adversely affect determination for Canada Lynx May affect, and is likely to adversely affect determination for grizzly bear and wolverine 	<ul style="list-style-type: none"> Impacts are the same as the No Action Alternative except for the following: Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat determination for monarch butterfly May affect, but is not likely to adversely affect determination for Canada Lynx and wolverine May affect, and is likely to adversely affect determination for grizzly bear

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		determination for bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, western toad, Columbia spotted frog, Yellowstone cutthroat trout, Townsend's big-eared bat, and western bumble bee.	<ul style="list-style-type: none"> • <i>May impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or loss of population viability</i> determination for bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, Columbia spotted frog, western toad, Yellowstone cutthroat trout, Townsend's big-eared bat, and western bumble bee. <ul style="list-style-type: none"> • <i>Would likely impact individuals, but not have significant impacts to the overall population</i> determination for	<ul style="list-style-type: none"> • <i>May impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or loss of population viability</i> determination for bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, Columbia spotted frog, western toad, Yellowstone cutthroat trout, Townsend's big-eared bat, and western bumble bee. <ul style="list-style-type: none"> • <i>Would likely impact individuals, but not have significant impacts to the overall population</i> determination for	<ul style="list-style-type: none"> • <i>May impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or loss of population viability</i> determination for bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, Columbia spotted frog, western toad, Yellowstone cutthroat trout, Townsend's big-eared bat, and western bumble bee. <ul style="list-style-type: none"> • <i>Would likely impact individuals, but not have significant impacts to the overall population</i> determination for	<ul style="list-style-type: none"> • <i>May impact individuals or their habitat, but will not likely contribute to a trend toward federal listing or loss of population viability</i> determination for bighorn sheep, great gray owl, boreal owl, flammulated owl, American goshawk, peregrine falcon, three-toed woodpecker, Columbia spotted frog, western toad, Yellowstone cutthroat trout, Townsend's big-eared bat, and western bumble bee. <ul style="list-style-type: none"> • <i>Would likely impact individuals, but not have significant impacts to the overall population</i> determination for

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			moose, mule deer, and elk. <ul style="list-style-type: none"> • <i>Impact individuals, but is not likely to impact at the population scale</i> determination for American pika, Pacific marten, and gray wolf. • <i>No Impact</i> determination for all other sensitive species. 	moose, mule deer, and elk. <ul style="list-style-type: none"> • <i>Impact individuals, but is not likely to impact at the population scale</i> determination for American pika, Pacific marten, and gray wolf. • <i>No Impact</i> determination for all other sensitive species. 	moose, mule deer, and elk. <ul style="list-style-type: none"> • <i>Impact individuals, but is not likely to impact at the population scale</i> determination for American pika, Pacific marten, and gray wolf. • <i>No Impact</i> determination for all other sensitive species. 	moose, mule deer, and elk. <ul style="list-style-type: none"> • <i>Impact individuals, but is not likely to impact at the population scale</i> determination for American pika, Pacific marten, and gray wolf. • <i>No Impact</i> determination for all other sensitive species.
	<i>Quantification (acreage) of existing habitat of federally listed and/or sensitive wildlife and fish species, migratory birds and SOLC in the study area, and proposed disturbance to that habitat by species as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> • Table 3.13-1 describes the threatened, endangered, proposed, and candidate wildlife species with potential for habitat within the project area. The discussion following this table in Section 3.13.3 in the Draft EIS quantifies existing habitat by species within the project area. • Table 3.13-2 describes the Region 4 	<ul style="list-style-type: none"> • In addition to migratory birds, there are 19 PTES species and SOLC with potentially impacted habitat in the proposed project area. For a discussion of impacts to habitat by species, refer to the respective species sub-heading within Section 3.13.4 of the Draft EIS. These discussions compare impacts by alternative and are specific to each species. 			

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		<p>sensitive species with potential habitat in the project area. The discussion following this table in Section 3.13.3 in the Draft EIS quantifies existing habitat by species within the project area.</p> <ul style="list-style-type: none"> Existing habitat for SOLC species and migratory birds with potential to overlap the project area is included under their respective subheadings within Section 3.13.3 of the Draft EIS 				
	<i>Quantification (acreage) of fragmentation of forest habitat that would result from the Action Alternatives and discussion of adherence to relevant standards from the 1997 Forest Plan and the Northern Rockies Lynx Amendment</i>	<ul style="list-style-type: none"> There would be no changes, additions, or upgrades under the No Action Alternative. As none of the proposed projects would be implemented there would be no additional habitat 	<ul style="list-style-type: none"> The Wildlife BA and BE prepared for this project contain calculations of habitat/vegetation type and calculate fragmentation by way of proposed project disturbance. The Draft EIS contains an analysis of habitat fragmentation as it relates to specific species, which is included under the respective species sub-heading within Section 3.13.4 of the Draft EIS. These species-specific discussions also include a discussion of Forest Plan consistency and Northern Rockies Lynx Amendment consistency (as it relates to Canada lynx). The discussions distinguish between impacts under different alternatives and highlight consistency under the various alternatives. 			

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		<p>fragmentation related to actions undertaken by GTR.</p> <ul style="list-style-type: none"> Increased development on private lands in Idaho and Wyoming in Teton County has caused habitat fragmentation and would likely continue to do so under the No Action Alternative 				
	<p><i>Analysis of direct and indirect impacts to lynx through percent change in denning, foraging, and overall suitable lynx habitat as well as existing and proposed road density in the lynx analysis unit (LAU) as a result of the Action Alternatives.</i></p>	<ul style="list-style-type: none"> Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future associated with the current infrastructure at GTR has the potential to have minor additional effects on lynx and its habitat that are above current baseline conditions. 	<p>Activities proposed under all action alternatives would have the following effects on lynx:</p> <ul style="list-style-type: none"> Convert currently mapped suitable lynx habitat to linkage areas or non-habitat within the Teton Creek and Badger Creek LAUs. Both Mono Trees and South Bowl currently do not function as quality foraging habitat for lynx, since the horizontal cover is low and there were minimal snowshoe hare detections. Decreased effectiveness would continue with expansion of the operational boundary into these areas. Both areas would continue to provide for lynx movements within and between LAUs. Impacts will not result in take of lynx and loss of habitat will not be detectable at the LAU scale given that the habitat is not the highest quality and ample higher quality habitat remains elsewhere in the LAU. The consequences to lynx habitat would be greatest under Alternatives 2 and 5 Add cumulatively to the net effects of habitat conversion that has occurred within both LAUs Increase traffic volumes on Ski Hill Road and Teton Pass but would not be expected to lead to a measurable increase in the probability of lynx mortality on either road Although the proposed project components would reduce the availability of lynx habitat, they would not compromise the ability of either LAU to support foraging, denning, or 			

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		Therefore, a determination of <i>may affect, but is not likely to adversely affect</i> , was reached for the Canada lynx under the No Action Alternative. Any potential effects under this alternative would be far less than any of the action alternatives.	traveling lynx. As a consequence, for all action alternatives, the proposed project may affect, but is not likely to adversely affect, the Canada lynx. All action alternatives were determined to be consistent with relevant NRLMD standards and guidelines applicable to ski areas. The standards and guidelines relevant to this analysis were directed by the GTR Expansion NRLMD Briefing Paper, which is cited in the Wildlife BA and available for review in the project file.			
	<i>Analysis of direct and indirect impacts to grizzly bears within the Bear Analysis Unit, including quantification of percent change in secure and non-secure habitat, potential human/bear conflicts and displacement resulting from noise and human presence during construction and operation as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Although GTR would not construct any new on-site development under this alternative, increasing recreation use in the future associated with the current infrastructure at GTR has the potential to have minor additional effects on grizzly bears and their habitats that are above current baseline conditions. Therefore, the 	<p>Activities proposed under all action alternatives would have the following effects on grizzly bears:</p> <ul style="list-style-type: none"> Convert current secure grizzly bear habitat to nonsecure habitat within the Teton BAU. Secure habitat is most abundant in the proposed Mono Trees and South Bowl expansion areas due to their distance from existing roads, while most of the existing SUP currently consists of nonsecure habitat due to existing roads associated with current resort operations. Expanding the GTR SUP boundary into Mono Trees under Alternatives 2 and 5 would entail constructing an access road through the center of the area to the proposed lift base, which would eliminate most of the secure habitat in the area. Expanding the GTR SUP boundary into South Bowl under Alternatives 2 and 4 would entail constructing an access road along the southern boundary of the South Bowl expansion area which would eliminate almost all of the secure habitat in the area and secure habitat outside of the expansion area in Teton Canyon. Roads proposed in the existing SUP under all alternatives would reduce secure habitat in the existing SUP and impact secure habitat outside the SUP Boundary to the east. Existing secure habitat is likely most valuable in the proposed expansion areas where little development and activity currently occurs; therefore, impacts under Alternatives 2, 4, and 5 would be most severe. Add cumulatively to the net effects of habitat conversion that has occurred within the Teton BAU 			

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		<p>No Action Alternative would still <i>may affect</i>, but is not likely to <i>adversely affect</i>, the grizzly bear. Any potential effects under this alternative would be far less than any of the action alternatives.</p>	<ul style="list-style-type: none"> Modify grizzly bear behavior and habitat use, due to increased development density and human activity, both during construction and once improvements are implemented (particularly improvements that would increase summer activity). On mountain facilities and food and beverage vendors could also modify grizzly bear behavior. Increased summer recreation activity, facilities, and associated bear attractants would increase the likelihood of bear-human conflicts which have the potential to lead to individual mortality if a problem bear is removed. Effects to grizzly bear habitat would be greatest under the Proposed Action, followed by Alternative 4, followed by Alternative 5, with lowest impacts under Alternative 3 <p>The proposed projects have the potential to adversely affect individual grizzly bears and potentially cause mortality of individual bears, through human-bear conflicts into the future. However, over 101,000 acres of secure habitat would remain in the Teton BAU and continue to provide habitat for grizzly bears. Though population growth has slowed in recent years, the population of grizzly bears in the Greater Yellowstone Ecosystem has increased from approximately 200-300 bears in 1975 to an estimated 1,000 in 2021.³²⁶ Given the regional population status of grizzly bears and widespread availability of secure grizzly bear habitat and valuable vegetative cover types for grizzly bears throughout the Teton BAU, the proposed projects under all action alternatives are not expected to impact the viability of the grizzly bear population in the Teton BAU or Targhee Planning Area. However, because incidental take of individuals would become more likely under all action alternatives (over the life of the projects), the proposed project <i>may affect, and is likely to adversely affect, the grizzly bear</i>.</p> <ul style="list-style-type: none"> Standards and guidelines from 1997 Forest Plan related to grizzly bear include measures designed for management of grazing allotments, which are not applicable to the proposed projects. Additional standards and guidelines include provisions for educational programs, habitat management, problem bears, and cross-country travel. Consistency with relevant standards and guidelines would occur under all action alternatives. A detailed description of <i>1997 Forest Plan</i> consistency as it relates to potential impacts to grizzly bear can be found in the Wildlife BA and is tracked through Appendix B of the Draft EIS. 			
	<i>Analysis of direct and indirect impacts to bighorn sheep, including percent</i>	<ul style="list-style-type: none"> Due to the projected increase in recreation use 	<ul style="list-style-type: none"> This alternative has the potential to result in an overall decline in 	<ul style="list-style-type: none"> Under Alternative 3, minimal habitat loss and fragmentation 	<ul style="list-style-type: none"> All but 2 acres of the modeled high quality bighorn sheep 	<ul style="list-style-type: none"> Alternative 5 does not include any direct impacts to South Bowl,

³²⁶ Haroldson et al. 2022; USFWS 2016

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>change in suitable habitat, percent change of modeled high-quality habitat on the CTNF and range of the Teton Range herd of bighorn sheep, and displacement resulting from increased noise and human presence during construction and operation (including in backcountry areas) as the result of the Action Alternatives.</i>	associated with GTR, and increasing participation in backcountry skiing, the No Action Alternative may <i>impact individuals or their habitat, but not likely contribute to a trend toward federal listing or loss of population viability.</i>	<p>the population of the Teton or Targhee Herd. Although the Proposed Action would impact the Teton Range bighorn sheep, across the overall Targhee Planning Area (which contains multiple herds), the alternative <i>May Impact Individuals or Their Habitat but would Not Likely Contribute to a Trend Toward Federal Listing or Cause a Loss of Population Viability.</i></p> <ul style="list-style-type: none"> For a complete discussion of this species and potential changes to habitat and displacement from project related impacts refer to the <i>Bighorn Sheep</i> subheading within Section 3.13.4 of the Draft EIS 	would occur for bighorn sheep from proposed development within the SUP boundary. Increased activity and development within the existing SUP could influence bighorn sheep use of neighboring habitat if recreationists travel more frequently into South Bowl, Teton Canyon, or the JSW for backcountry skiing or hiking. However, given that bighorn sheep currently travel through or near South Bowl despite intermittent backcountry skiing, it is likely that access to the Apostle Cliffs mineral lick and habitat in Teton Canyon would remain. Further, projects aimed at	habitat within the total project area are within the South Bowl area and existing SUP boundary; therefore, impacts of Alternative 4 would be comparable to those of the Proposed Action	where the more valuable bighorn sheep is located and which provides an important movement corridor, and thus impacts to bighorn sheep under Alternative 5 would be lower compared to Alternatives 2 and 4. Similar to Alternative 3, projects aimed at improving habitat in South Bowl and Teton Canyon for bighorn sheep use, including potential winter closure areas suggested by the Teton Range Bighorn Sheep Working Group and the Teton Canyon Hazardous Fuels Reduction Project, would proceed under Alternative 5 and may provide benefits for bighorn sheep

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				improving habitat in South Bowl and Teton Canyon for bighorn sheep, including potential winter closure areas suggested by the Teton Range Bighorn Sheep Working Group and the Teton Canyon Hazardous Fuels Reduction Project, would proceed under Alternative 3 and may provide benefits for the Teton herd.		
	<i>Analysis of short term and long term direct, indirect, and cumulative impacts to avian species as a result of tree removal and the Forest Plan amendment, including the removal of trees for glade development as Boreal Owls, Flammulated Owls, Three-toed Woodpeckers and American Goshawks are likely found in those areas.</i>	<ul style="list-style-type: none">• Ongoing recreation associated with GTR continues to impact avian species such as great gray owls, boreal owls, flammulated owls, northern goshawks, peregrine falcons, three-toed woodpeckers, while projected growth of GTR visitation, as well	<ul style="list-style-type: none">• A discussion of each avian species is contained under their respective subheading within Section 3.13.4 of the Draft EIS. Under all alternatives and for all the Region 4 Sensitive Species considered in this analysis, a determination of <i>May Impact Individuals or Their Habitat, but Will Not Likely Contribute to a Trend Toward Federal Listing or Loss of Population Viability</i>. was reached. Forest Plan consistency is included in these discussions as well. Inconsistencies were identified for certain species and certain alternatives, which is further described in the Draft EIS and Appendix B.• In general, the Proposed Action and Alternative 5 are most impactful for the listed avian species, because expansion into the Mono Trees area could impact nesting and other valuable habitat that exists within this proposed project area. Impacts under Alternatives 3 and 4 are generally less impactful to these species as Mono trees is not included in these alternatives and South Bowl (Alternative 4) contains limited late seral or late seral/potential old growth.• Peregrine Falcons are the exception to the previous statement as Alternative 4 and the Proposed Action would be most impactful to this species. This is because the South			

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		as increased recreation in the vicinity, would further impact these species in the area into the future. Therefore, the No Action Alternative <i>may impact individuals or their habitat, but would not likely contribute to a trend toward federal listing or loss of population viability.</i>	Bowl expansion area contains suitable nesting habitat for falcons and disturbance outside the current SUP boundary would bring development, noise, and activity further into Teton Canyon where valuable nesting habitat exists.			
	<i>Analysis of short term and long term direct, indirect, and cumulative impacts to Columbia Spotted Frogs and Western Toads based on riparian habitat development impacts.</i>	<ul style="list-style-type: none"> Ongoing recreation associated with GTR continues to impact western toads, and Columbia spotted frogs, while projected growth of GTR visitation, as well as increased recreation in the vicinity, would further impact these species in the area into the future. Therefore, the No Action Alternative <i>may impact individuals or</i> 	<ul style="list-style-type: none"> The Proposed Action has the potential to impact western toad habitat. Changes to aquatic habitats have the potential to result in the direct mortality of western toads in their aquatic stages and an overall impact on recruitment (if the species were to occur). PDC and standards and guidelines from the 1997 Forest Plan would reduce negative impacts to riparian and aquatic habitats with some potential to support western toads. Although clear cut tree removal for lifts and ski runs would result in a loss of habitat, the presence of suitable upland foraging habitat would remain in the project area, particularly within the AIZs. Selective thinning of trees for ski glades may result in improved habitat (in some areas) by partially opening the canopy, providing needed solar radiation for toads. As a result, the Proposed Action <i>May Impact Individuals or Their Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability.</i> Alternatives 4 and 5 would be similar to the Proposed Action in their impacts to the western toad. Alternative 3 has the potential to impact western toad upland habitat and to a lesser extent riparian and aquatic breeding habitat. The impacts to the Columbia spotted frog from the action alternatives are similar to those described for the western toad. The exception is that there are less potential direct and indirect impacts to Columbia spotted frogs from vegetation/construction activities in the upland habitats. As a result, the Proposed Action <i>May Impact Individuals or Their</i> 			

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		<i>their habitat, but would not likely contribute to a trend toward federal listing or loss of population viability.</i>	<i>Habitat, But Will Not Likely Contribute to a Trend Towards Federal Listing or Loss of Population Viability.</i>			
	<i>Qualitative discussion of short term and long term direct, indirect, and cumulative impacts to migratory birds as a result of habitat removal from trail development and the increased number of structures with windows.</i>	<ul style="list-style-type: none">Ongoing recreation associated with GTR continues to impact migratory birds, while projected growth in GTR visitation, as well as increased recreation and traffic in the vicinity, would further impact migratory birds in the area into the future.	<ul style="list-style-type: none">All the action alternatives would result in a decrease in habitat available for nesting migratory birds. Construction activities associated with the proposed projects during the spring and summer nesting season could disturb nesting adults, if nests occur within the zone of influence of the projects. If disturbance occurs prior to fledging of the nestlings, it may result in abandonment of the nest by adults, and subsequent mortality of nestlings. The clearing and thinning of forest habitat for trails, lifts, and glades may also result in the removal of nest sites. PDC would minimize the likelihood of impacts to nesting birds: <i>“Vegetation clearing activities are generally planned to occur outside of the migratory bird nesting period, which is typically from May 15 to July 15. If vegetation clearing activities must occur during the nesting period, U.S. Forest Service personnel (or individuals deemed qualified by the Forest Service) would conduct nest searches in appropriate habitats prior to the commencement of the vegetation clearing activities. The exact area to be surveyed would be based on the scope of the surface disturbance activities, the habitat to be disturbed, and the potential species to be impacted. If nesting migratory birds occur, the Forest Service would delineate appropriate buffers and halt construction within the buffers until the nesting is complete.”</i> However, some bird species may cease nesting within areas of the proposed projects (after implementation) due to disturbance and habitat loss/degradation. Therefore, all the action alternatives have the potential to impact individuals at the local level; however, all action alternatives are unlikely to substantially impact populations. Alternative 2 would impact the largest acreage of suitable nesting habitat including forested habitat in the existing SUP, Mono Trees, and South Bowl; meadow habitat in the existing SUP and South Bowl; and talus and cliff areas in South Bowl. Alternative 4, with proposed expansion into South Bowl, would likely be less impactful than Alternative 5 (with the proposed Mono Trees expansion) because the Mono Trees expansion area is larger, and more acres of suitable habitat would be impacted than in South Bowl. Alternative 3, no SUP expansion, would cause the least amount of disturbance to migratory bird populations out of the action alternatives.			
Vegetation	<i>Qualitative discussion of the presence/absence of</i>	<ul style="list-style-type: none">There are a total of 511.19 acres of whitebark pine within the Project Area				

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Vegetation cover types and age class composition may be impacted under the proposed projects relative to the desired condition identified in the Targhee National Forest Plan. Federally-listed plant species, rare plants (including Forest Service Region 4 sensitive species and species of local concern [SOLC]), other native plant communities (including overstory vegetation), and the presence of invasive species and noxious weeds may be impacted as a result of the proposed projects	<i>federally-listed plant species, rare plants, other native plant communities and invasive species and noxious weeds within the study area, including whitebark pine and potential impacts/eradication of these species as a result of the Action Alternatives.</i>	<ul style="list-style-type: none"> There are two Wyoming Natural Diversity Database Species of Concern (WYNDDS), including 14 subpopulations, approximately 14.7 acres of keeled bladderpod (<i>Lesquerella carinata</i> var. <i>carinata</i>; synonym <i>Physaria carinata</i> ssp. <i>carinata</i>) and 58 clusters, approximately 0.04 acre of brightgreen spleenwort (<i>Asplenium trichomanes-ramosum</i>; synonym <i>A. viride</i>). There is one Forest Service Region 4 Sensitive Specie, the Payson's bladderpod (<i>Lesquerella paysonii</i>; synonym <i>Physaria carinata</i> ssp. <i>paysonii</i>) which was not observed during field surveys in 2019 but was observed at the top of Dreamcatcher lift during field surveys in 1995. Approximately 10 plants were observed. There are two TPWs within the project area that were used to assess the old growth within the Project Area. Given data restrictions, data for TPW19 was used to assess the total percentage of old growth within the Project Area. It was determined that there is 27 percent of old growth within TPW19. Within the Project Area there is approximately 2,519 noxious weeds and invasive plants within the Project Area. This includes 1,532 Canada thistle, 52 musk thistle, 654 scentless chamomile, and 281 yellow toadflax. Action alternatives are anticipated to result in the potential impacts to vegetation in the form of trampling and snow compaction. Some WBP and other sensitive species would be impacted. 				
	<i>Quantification (acreage) of proposed ground disturbance and resulting effects to vegetation (both understory and</i>	<ul style="list-style-type: none"> Under the No Action Alternative vegetation will remain in the same condition as it is currently. 	<ul style="list-style-type: none"> Under Alternative 3 it is anticipated that approximately 59.33 acres or 355 individual trees or small stands of WBP would be impacted by the projects. Impacts to the keeled bladderpod and brightgreen spleenwort under Alternative 3 would be similar as experienced under the Proposed Action. Determination of effects for both species would be may affect, likely to adversely affect. 			

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	<i>overstory) by vegetation type within each terrain pod.</i>	Due to increased visitation during both the summer and winter, vegetation may be impacted by trampling or snow/soil compaction. Additional ongoing factors like increases in temperature and shifts in precipitation may impact the presence and absence of vegetation within the Project Area.	<ul style="list-style-type: none"> Impacts to Payson's bladderpod would be similar as experienced under the Proposed Action. Overall, Alternative 3 may affect but is unlikely to adversely affect the Payson's bladderpod Approximately 57 acres, or 0.2 percent of the total acres of late seral and potential old growth forest within TPW19 would be impacted. Given approximately 26.7 percent of the late seral stage and potential old growth forest within the TPW19 would be maintained, Alternative 3 would be in adherence to the vegetation guideline within the 1997 Forest Plan. Impacts to the spread of noxious weeds and invasive plants would be similar as experienced under the Proposed Action; however, to a lesser extent. PDC and BMPs would still be implemented to mitigate the spread of noxious weeds and invasive species Impacts to WBP under Alternative 4 would be similar as experienced under the Proposed Action. Given most WBP are within the South Bowl expansion area and at high elevations within the existing SUP, both the Proposed Action and Alternative 4 would have the same impact on WBP. Impacts to WYNDDS and Forest Service Region 4 Sensitive Specie would be similar as experienced under the Proposed Action Approximately 62 acres or 0.2 percent of late seral and potential old growth forest stands would be impacted by projects under Alternative 4. Given approximately 26.7 percent of the late seral stage and potential old growth forest within the TPW19 would be maintained, Alternative 4 would be in adherence to the vegetation guideline within the 1997 Forest Plan. Impacts to the transport and establishment of noxious weeds and invasive species under Alternative 4 would be similar as experienced under the Proposed Action, but more intensive than under Alternative 3. Similar to the Proposed Action a Noxious Weed Management Plan, along with other PDC and BMPs would be implemented to prevent the further spread of noxious weeds and invasive species. 			
	<i>Quantification of the forested acres of lands designated as management prescription 2.8.3 Aquatic Influence Zone that would be converted</i>	<ul style="list-style-type: none"> Under the No Action Alternative current operations at GTR would remain the same and lands that 	<ul style="list-style-type: none"> Under the proposed action approximately 125 acres of Management Area 2.8.3 would be affected 	<ul style="list-style-type: none"> Similar to the No Action Alternative, there would be no conversion of Management Area 2.8.3 given 	<ul style="list-style-type: none"> Under Alternative 4, given there is no Management Area 2.8.3 within the South Bowl SUP 	<ul style="list-style-type: none"> Under Alternative 5, conversion of Management Area 2.8.3 lands would be similar as under the proposed action.

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative		Alternative 2 – Proposed Action		Alternative 3 – No SUP Expansion		Alternative 4 – South Bowl, No Mono Trees		Alternative 5 – Mono Trees, No South Bowl	
	<i>to management prescription 4.2 Special Use Authorization Recreation Sites.</i>	are designated as Management Area 2.8.3 would not be converted to Management Area 4.2		under this alternative. Given the 1997 Forest Plan direction that Management Area 4.2 prevails over other Management Areas, only Management Area 2.1.1 would be amended under the proposed action. Therefore, Management Area 2.8.3 would persist under the proposed action; however, would be superseded by the direction of Management Area 4.2.		there is no expansion of the SUP area		expansion area, there would be no impacts on these lands		Refer to that discussion for more information	
	<i>Quantification of existing old growth and late seral stage stands in the Teton Creek and Leigh Creek Watersheds including discussion of proposed impacts as the result of the Action Alternatives.</i>		Existing Percentage of Late Seral and Old Growth (%)	Alternative 2 Percentage of Late Seral and Old Growth (%) under Proposed Conditions	Alternative 3 Percentage of Late Seral and Old Growth (%) under Proposed Conditions	Alternative 4 Percentage of Late Seral and Old Growth (%) under Proposed Conditions	Alternative 5 Percentage of Late Seral and Old Growth (%) under Proposed Conditions				
		Percent Forested	25.7	25	25.1	25.1	25				

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		Acres in TPW19 in Late Seral/Potential Old Growth				
		Percent Forested Acres in TPW19 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.7	21.5	21.6	21.6
		Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth	28.9	28.8	28.8	28.8
		Percent Forested Acres in TPW20 in Late Seral/Potential Old Growth in 300-acre Forest Blocks	21.3	21.3	21.3	21.3
		<ul style="list-style-type: none"> Direct impacts would be minimal in the long-term and would not reduce the percentage of late seral and potential old growth forest stands within the Teton Creek and Leigh Creek Watersheds 				
	<i>Qualitative discussion of potential impacts to</i>	<ul style="list-style-type: none"> Under the No Action Alternative 	<ul style="list-style-type: none"> As described above, WBP, WYNDDS, Forest Service Region 4 Sensitive Species, and Old growth forests would be directly and indirectly impacted by all Action Alternatives. 			

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	<i>federally-listed plant species, rare plants and other native plant communities, as well as the potential for an invasive species and noxious weeds to spread as a result of the action alternatives.</i>	vegetation will remain in the same condition as it is currently. Due to increased visitation during both the summer and winter, vegetation may be impacted by trampling or snow/soil compaction. Additional ongoing factors like increases in temperature and shifts in precipitation may impact the presence and absence of vegetation within the Project Area.	Through the increase in both summer and winter visitation snow and soil compaction could occur, which could alter the hydrologic and soil function of the Project Area. Plants could also be trampled by hikers and bikers who are participating in summer recreation within the existing and proposed SUP. Noxious weeds would also have the potential to spread via construction vehicles and personnel during the spring and summer. Within the implementation of specific PDC and BMPs the transport and establishment of noxious weeds and invasive species would be mitigated. Impacts would be most significant under the Proposed Action, followed by Alternative 4, Alternative 5, then Alternative 3. Refer to the discussion above for more information on quantitative impacts to vegetation and plant species within the Project Area			
Soils Ground disturbance, including tree clearing and grading associated with construction and operation of the proposed projects, as well as proposed snowmaking, have the potential to	<i>Qualitative discussion of the existing soil map units or land types present in the study area based on United States Department of Agriculture (USDA) Natural Resources Conservation Service soil mapping data and the Forest Service Terrestrial Ecological Unit Inventory, interpretive factors such as erosion potential and</i>	<ul style="list-style-type: none"> Approximately 724.8 acres (68.7 percent) of the soil within the analysis area are rated as having a slight erosion hazard and 327.9 acres (31.1 percent) are rated as having a moderate erosion hazard 	<ul style="list-style-type: none"> Approximately 172.1 acres of disturbance by grading would occur on soil with a moderate erosion hazard, approximately 126.9 acres would occur on soil with a slight erosion hazard Trail building and road construction activities in the 1216, 1170, and 1315 soil types, which overlap the Darby and Hominy Peak formations, could result in the release of fine sediment into streams and exacerbate erosion impacts 			

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increase erosion and soil compaction within the study area. In addition, bare mineral soil exposed on steep slopes as a result of the heavy equipment use could funnel through downhill channels and increase soil erosion.	<i>instability ratings, and the potential impacts to soils associated with the Action Alternatives.</i>	<ul style="list-style-type: none"> Nearly all map units have a medium potential for compaction (1052.7 acres, 99.7 percent) Soil unit 34 – rock outcrop is not rated for erosion or soil compaction Under the No Action Alternative, conditions would remain very similar to the existing condition; GTR operations and maintenance activities would continue to occur, likely resulting in minor soil impacts due to erosion 				
	<i>Summary of the increased erosion hazard resulting from temporary and permanent ground disturbance, as presented in the Hydrology Technical Report and corresponding EIS section.</i>	<ul style="list-style-type: none"> Soil losses from erosion due to rainfall, runoff, and wind would continue to occur at existing rates and would continue to be from existing roads and areas 	<ul style="list-style-type: none"> Due to mixing of soil horizons, soil profile characteristics and soil productivity would be drastically changed over pre-construction conditions The loss of soil resources would be long term and permanent Increases in soil erosion would occur from mountain biking and hiking activities, vehicle traffic on new access roads, additionally snowmaking infrastructure and snowmelt, and from maintenance of the trails, access roads, and facilities The increase in erosion hazard would vary depending on the type and quantity of projects proposed under each alternative, with the greatest impact under the Proposed Action and the least under Alternative 3 			

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
		with a low vegetative cover				
	<i>Qualitative discussion of applicability of and compliance with the standards and guidelines of the 1997 Forest Plan as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Geology and soil resources on NFS lands would continue to be managed as under current conditions and continue to comply with relevant Forest Plan guidance for the geology and soils resource 	<ul style="list-style-type: none"> The proposed projects under all action alternatives are expected to comply with relevant guidelines from the Forest Plan with implementation of PDC such as: stockpiling topsoil to maintain organic matter, conducting soil surveys to ensure no loss of organic matter, restoring depths of soil A and/or organic ground cover, and avoiding areas of soil wood to the greatest degree possible The Forest Plan does not contain standards for the geology and soils resource that are relevant to this analysis 			
	<i>Quantification of disturbance type by soil map unit and loss of topsoil/organic layer/forest floor material as the result of the Action Alternatives and potential change from existing conditions including short and long term impacts.</i>	<ul style="list-style-type: none"> GTR operations and maintenance activities would continue to occur, likely resulting in minor soil impacts due to erosion; however, conditions would remain very similar to those described under the Affected Environment 	<ul style="list-style-type: none"> Grading or grading/tree clearing: Map Unit 1170, 27.4 acres; Map Unit 1172, 81.9 acres; Map Unit 1216, 45 acres; Map Unit 1315, 144.5 acres; Map Unit 1593, 0.2 acres; Map Unit 34, 2.5 acres Vegetation Clearing: Map Unit 1170, 31.7 acres; Map Unit 1172, 157.8 acres; Map Unit 1216, 323.7 acres; Map Unit 1315, 120.2 acres; 			

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			<p>Map Unit 1593, 0 acres; Map Unit 34, 0.7 acres</p> <ul style="list-style-type: none"> Up to 301.5 acres of topsoil and/or organic material could be directly impacted by grading or vegetation removal and grading, which could be lessened by PDC including the salvaging of topsoil 			
	<i>Qualitative discussion of short and long term impacts to soils in areas that are chipped and burned as the result of the Action Alternatives and potential change from existing conditions.</i>	<ul style="list-style-type: none"> The No Action Alternative would not require chipping and burning 	<ul style="list-style-type: none"> Burning in gladed terrain, if necessary, could further damage the topsoil, organic material, and forest floor material in addition to changing the soil physical and chemical properties in the long term. Short term impacts in the form of compaction and displacement of topsoil could also occur as machines are used to perform chipping and burning activities. Both short- and long-term impacts to soils as a result of chipping and burning would be lessened with implementation of PDC 			
Hydrology The action alternatives could alter watershed conditions, stream and riparian health, and surface water and groundwater quality, quantity, and distribution in the study areas. In addition, the proposed SUP expansion would change several areas from Forest	<i>Discussion of existing and proposed Hydrologic Disturbance (HD), in response to the Targhee National Forest Plan guideline stating: "Not more than 30% of any of the principal watersheds and their subwatersheds should be in a hydrologically disturbed condition at any one time."³²⁷</i>	<ul style="list-style-type: none"> There are two Teton Principal Watersheds (TPW) (Teton Creek and Leigh Creeks) and three hydrologic unit code (HUC) subwatersheds (Dry Creek, South Leigh Creek, and Teton Creek) within the analysis area. Approximately 3,211 acres of Teton Creek, which is 10 	<ul style="list-style-type: none"> The Proposed Action creates a 13 percent combined (existing, approved, and proposed) HD for Teton Creek and a 3 percent combined HD for Leigh Creeks. For the HUC 6 Watersheds, Dry Creek would have a 13 percent combined HD, South Leigh Creek would have a 1 percent combined HD, and Teton Creek would have a 10 percent combined HD 			

³²⁷ USDA Forest Service 1997

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Plan management prescription 2.8.3 Aquatic Influence Zone to 4.2: Special Use Authorization Recreation Sites.		percent of the TPW, has existing HD. Approximately 800 acres of Leigh Creeks, which is 3 percent of the TPW, has existing HD. Additionally, approximately 517 acres of Dry Creek, 84 acres of South Leigh Creek, and 1,166 acres of Teton Creek, which is 12 percent, 1 percent, and 5 percent of the total HUC area respectively, have HD.				
	<i>Quantification (acreage of AIZ and miles of stream type) of the amount of management prescription 2.8.3 Aquatic Influence Zone that would be converted to management prescription 4.2 Special Use Authorization Recreation Site as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Under the No Action Alternative current operations at GTR would remain the same and lands that are designated as Management Area 2.8.3 would not be converted to Management Area 4.2 	<ul style="list-style-type: none"> Under the proposed action approximately 125 acres of Management Area 2.8.3 would be affected under this alternative. Given the 1997 Forest Plan direction that Management Area 4.2 prevails 	<ul style="list-style-type: none"> Similar to the No Action Alternative, there would be no conversion of Management Area 2.8.3 given there is no expansion of the SUP area 	<ul style="list-style-type: none"> Under Alternative 4, given there is no Management Area 2.8.3 within the South Bowl SUP expansion area, there would be no impacts on these lands 	<ul style="list-style-type: none"> Under Alternative 5, conversion of Management Area 2.8.3 lands would be similar as under the proposed action. Refer to that discussion for more information

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
			over other Management Areas, only Management Area 2.1.1 would be amended under the proposed action. Therefore, Management Area 2.8.3 would persist under the proposed action; however, would be superseded by the direction of Management Area 4.2.			
	<i>Quantification of existing and proposed disturbance (acres and/or miles of streams affected) in AIZs by activity type as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Under the No Action Alternative, there would be no proposed impacts to the AIZ as the current operations at GTR would remain in their existing condition. There would be, however, approximately 94 acres of existing AIZ impacts and approximately 17 acres of previously 	<ul style="list-style-type: none"> Under the proposed action the existing AIZ water types would be similar as described under the No Action Alternative. Due to projects as a result of the proposed action there would be approximately 70 acres of proposed impacts to AIZ water types within the project area. In combination with 	<ul style="list-style-type: none"> Under Alternative 3 there would be approximately 66 acres of proposed impacts to the AIZ. This, in combination with the existing and previously approved impacts to the AIZ as identified under the No Action Alternative, would result in a combined total of approximately 	<ul style="list-style-type: none"> Under Alternative 4 there would be approximately 66 acres of proposed impacts to the AIZ. This, in combination with the existing and previously approved impacts, would total to approximately 158 acres of impacts to the AIZ. 	<ul style="list-style-type: none"> Under Alternative 5 there would be approximately 70 acres of proposed impacts to the AIZ. This, in combination with the existing and previously approved impacts, would total to approximately 173 acres of impacts to the AIZ.

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		<p>approved impacts, totaling approximately 111 acres of combined impacts. The existing AIZ water types within the Project Area are as follows:</p> <ul style="list-style-type: none"> • 124 acres of perennial non-fish bearing stream reaches, specifically Mill Creek and Dry Creek • 5 acres of reservoirs, specifically the unnamed waste water lagoon • 110 acres of wetlands that are greater than an acre • 198 acres of intermittent unnamed reaches • 47 acres of wetlands that are less than an acre 	the existing and previously approved impacts as identified under the No Action Alternative, the proposed action would impact a combined total of approximately 178 acres of the AIZ.	158 acres of the AIZ.		
	<i>Qualitative identification of existing</i>	<ul style="list-style-type: none"> • There is currently surface erosion 	<ul style="list-style-type: none"> • There are numerous 	<ul style="list-style-type: none"> • Since most of the groundwater 	<ul style="list-style-type: none"> • Since most of the groundwater 	<ul style="list-style-type: none"> • Since most of the groundwater

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>surface erosion, water quality, and stream and riparian health, as well as analysis of potential effects to these metrics and projected change as the result of the Action Alternatives.</i>	<p>within Ricks Basin, where erodible rock units like the Hominy Peak and Darby Formations overlay the Bighorn Dolomite aquifer. Water that flows over this aquifer is not filtered as well given the large cavities within the aquifer</p> <ul style="list-style-type: none"> There are two TPWs that overlay the project area, TPW19 (Teton Creek) and TPW20 (Leigh Creeks), along with three subwatersheds: Dry Creek, South Leigh Creek, and Teton Creek. There is currently existing and approved HD to these streams within the existing SUP. Most of the channels within GTR are under properly 	<p>projects that exist over the Hominy Peak and Darby Formations under the Proposed Action. These projects include tree clearing, glading, and grading which has the potential to increase erosion and thus increase turbidity throughout groundwater as the water flows through the Bighorn Dolomite aquifer. Specifically, this increase in turbidity could impact the Alta Spring which provides water for the town of Alta, WY. With specific PDC and BMPs these impacts would be mitigated (refer to Table 2-4. Project Design Criteria for more information).</p>	<p>impacts and erosion occurs within the existing SUP, Alternative 3 would have the same impacts as the Proposed Action</p> <ul style="list-style-type: none"> Alternative 3 would have a similar but lesser effect overall as compared to the Proposed Action when it comes to water quality and riparian health 	<p>impacts and erosion occurs within the existing SUP, Alternative 4 would have the same impacts as the Proposed Action</p> <ul style="list-style-type: none"> Alternative 4 would have a similar but lesser effect overall as compared to the Proposed Action when it comes to water quality and riparian health 	<p>impacts and erosion occurs within the existing SUP, Alternative 5 would have the same impacts as the Proposed Action</p> <ul style="list-style-type: none"> Alternative 5 would have a similar but lesser effect overall as compared to the Proposed Action when it comes to water quality and riparian health

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		<p>functioning conditions.</p> <ul style="list-style-type: none"> Potential effects to these metrics include sediment erosion, nutrient loading, along with changing the hydrologic function of sub-alpine streams through construction. 	<ul style="list-style-type: none"> Most of the streams are under properly functioning conditions, and the functional-at risk channels are typical of a ski area. Given the At Risk channels being typical of a ski area, impacts to streams are expected to be low. There is a potential for sediment and nutrient loading to occur under the Proposed Action, however with the implementation of specific PDC and BMPs these impacts would be mitigated. 			
	<i>Identification of any Clean Water Act (CWA) impaired or threatened waterbody segments within the study area and discussion of potential impacts as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> There are no CWA impaired or threatened waterbody segments within the Project Area. There are no potential impacts to CWA impaired or threatened waterbodies under any alternative. 				

Resource Area and Issue	Indicator	Alternative 1 – No Action Alternative	Alternative 2 – Proposed Action	Alternative 3 – No SUP Expansion	Alternative 4 – South Bowl, No Mono Trees	Alternative 5 – Mono Trees, No South Bowl
	<i>Quantification of existing and proposed snowmaking operations, including anticipated changes in water quantity (e.g., water yield [acre-feet], peak flows [cubic feet per second]) and water quality which may result from tree removal and new snowmaking withdrawals and runoff.</i>	<ul style="list-style-type: none"> Average snowmaking at GTR amounts to a snow depth of 18 inches across the existing snowmaking area per year. Snowmaking snow is unique as it is 50 percent water and 50 percent air. So 18 inches of snowmaking snow totals 9 inches of water. It was determined that the peak of a set of median values of snow water equivalence at GTR was 47.8 inches on April 30th which totals 5,711 acre-feet within Teton Creek watershed and 2,273 acre-feet in the Dry Creek watershed. The highest snow water equivalence is expected to occur in late April. The additional water for increased snowmaking coverage would come from additional groundwater wells. 				
	<i>Sufficiency of water determination for resort operation under existing and proposed conditions.</i>	<ul style="list-style-type: none"> Given there is no expansion proposed or new construction projects, GTR would continue to have sufficient water under the No Action Alternative 	<ul style="list-style-type: none"> GTR has proposed an additional 57 acres of snowmaking on lower-mountain circulation routes and high use trails. Additional groundwater wells are proposed to provide sufficient water to the snowmaking system. Specifically, as identified in the Groundwater Report, it is expected that the two new wells in conjunction with the other existing wells, will provide enough water for combined culinary and snowmaking use, approximately 640 gallons per minute. It is necessary for the two new wells to be properly engineered and placed in locations that would not inhibit the output of the other two existing wells. 			
	<i>Analysis of potential impacts to downstream water quality resulting from runoff at GTR being transported through subsurface channels as the result of the Action Alternatives, including a discussion of changes from existing conditions.</i>	<ul style="list-style-type: none"> As described above there are currently disturbance within the existing SUP over the Hominy and Darby Formations which contributes sediment to water flowing over the Bighorn Dolomite aquifer. This aquifer has 	<ul style="list-style-type: none"> Most critical hydrologic effects could occur in the Papoose Creek watershed at the south end of the existing SUP. This watershed, along with others that flow over the Bighorn Dolomite aquifer, contributes groundwater to Alta Spring, which serves as a community water source for the town of Alta, WY. The creek is also a tributary to Teton Creek which provides water to numerous wildlife species downstream. Ground-disturbing actions in this watershed could cause more fine, high mobile sediment to mobilize and increase the turbidity of both Papoose Creek, Teton Creek, and Alta Spring. This aquifer has large cavities which minimizes its ability to filter groundwater, thus contributing to sediment transportation and turbidity. Overall, PDC and BMPs would be required for actions that occur over the Hominy Peak and Darby Formations that are not normally required for the operations that occur over Madison Limestone. 			

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		large cavities which minimizes its ability to filter groundwater, this contributing to sediment transportation and turbidity.				
Wetlands Identified wetlands and other waters of the U.S. throughout the study area could be temporarily and/or permanently affected by construction and implementation of proposed projects.	<i>Qualitative discussion of area of wetlands and other Waters of the U.S. within the study area (acres/linear feet) that would be impacted by the Action Alternatives.</i>	<ul style="list-style-type: none">As defined in the 1997 Forest Plan, the AIZ is associated with surface waters, wetlands, and riparian areas that provide unique functions and values to hydrologic, geomorphic, and ecological processes. The AIZ is comprised of a buffer zone around surface waters and wetlands. The impacts to wetlands and waters of the U.S. as a result of Action Alternatives are as follows:66.78 acres in the existing SUP0.01 acres in the South Bowl Area3.86 acres in the Mono Trees Area				
	<i>Disclosure of wetland functions and values within the study area and discussion of potential impacts as the result of the Action Alternatives.</i>	<ul style="list-style-type: none">To assess the ecological functions and values of the wetlands within the project area, a qualitative functional assessment was completed, using the Montana Department of Transportation – <i>Montana Wetlands Assessment Method</i>. Existing functions and values are listed below. Impacts to wetland functions and values would be most intensive under the Proposed Action, followed by Alternative 4, and then Alternative 5 and Alternative 3.High rating for general wildlife habitatLow rating for general fish habitatModerate to low rating for flood attenuationModerate rating for short and long term surface water storageHigh rating for sediment/nutrient/toxicant retention and removalHigh rating for sediment/shoreline stabilizationHigh rating of production export/terrestrial and aquatic food chain supportHigh rating of groundwater dischargeHigh rating of uniquenessHigh rating of recreation/education potential				

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	<i>Narrative description of wetland communities, classifications and disclosure of anticipated temporary and/or permanent impacts (acres/linear feet) as the result of the Action Alternatives.</i>	<ul style="list-style-type: none"> Mapping of the wetlands and riparian areas within the project area was completed during the 2019 field surveys. Under the No Action Alternative there would not be new proposed impacts to wetlands. Existing indirect impacts may already be occurring like shading of wetland vegetation. There is a total of approximately 42.26 acres of wetlands within the existing SUP. These wetland types include: <ul style="list-style-type: none"> 7.7 acres of emergent 0.24 acre of emergent and scrub-shrub 16.78 acres of emergent and riparian 0.05 acre of scrub-shrub 11.98 acre of scrub-shrub and riparian 5.51 acres of riparian Wetlands under the 1997 Forest Plan are characterized as the Aquatic Impact Zone (AIZ). Impacts to the AIZ are further described below. 				
	<i>Quantification of existing and proposed disturbance in AIZs by activity type.</i>	<ul style="list-style-type: none"> Under the No Action Alternative, there would be a continuation of existing management practices. Some minor indirect impacts to wetlands are likely occurring within the existing GTR SUP area as a result of ongoing ski area operations (i.e., snow compaction, increased hydrologic budgets from 	<ul style="list-style-type: none"> Impacts to the wetlands and waters of the U.S. under the Proposed Action are as follows: <ul style="list-style-type: none"> 0.25 acres of impacts from all guest service facilities 2.60 acres of impacts from all lifts 0.01 acre of impacts from the avalauncher Less than 0.00 acre of impacts from cat/construction 	<ul style="list-style-type: none"> Impacts to wetlands and waters of the U.S. under Alternative 3 are as follows: <ul style="list-style-type: none"> 0.25 acres of impacts from all guest service facilities 2.30 acres of impacts from all lifts Less than 0.00 acre of impacts from cat/construction maintenance access route 	<ul style="list-style-type: none"> Impacts to wetlands and waters of the U.S. under Alternative 4 are as follows: <ul style="list-style-type: none"> 0.25 acres of impacts from all guest service facilities 2.30 acres of impacts from all lifts 0.01 acre of impacts from the avalauncher Less than 0.00 acre of impacts from cat/construction 	<ul style="list-style-type: none"> Impacts to the wetlands and waters of the U.S. under Alternative 5 are as follows: <ul style="list-style-type: none"> 0.25 acres of impacts from all guest service facilities 2.60 acres of impacts from all lifts Less than 0.00 acre of impacts from cat/construction maintenance access route 1.05 acres of impacts from the fat bike trails

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		<p>snowmaking, and vegetation removal). There are no new anticipated direct effects to wetland or other water of the U.S. from the No Action Alternative. Ongoing and projected impacts of increasing temperatures and shifts in precipitation on regional hydrology may impact the extent, distribution, and functions of the wetlands within the existing GTR SUP area; however, these impacts will be minor.</p>	<p>maintenance access route</p> <ul style="list-style-type: none"> 1.05 acres of impacts from the fat bike trails 16.66 acres of impacts from glades 0.03 acre of impact from hiking trails 3.79 acres of impacts from multi-use trail/mountain biking trails 11.47 acres of impacts from roads 23.87 acres of impacts from ski trails 4.99 acres of impacts from snowmaking pipes 5.64 acres of impacts from the summer activities zones 	<ul style="list-style-type: none"> 1.05 acres of impacts from the fat bike trails 15.86 acres of impacts from glades 0.03 acre of impact from hiking trails 3.79 acres of impacts from multi-use trail/mountain biking trails 11.28 acres of impacts from roads 21.3 acres of impacts from ski trails 4.99 acres of impacts from snowmaking pipes 5.64 acres of impacts from the summer activities zones 	<p>maintenance access route</p> <ul style="list-style-type: none"> 1.05 acres of impacts from the fat bike trails 15.86 acres of impacts from glades 0.03 acre of impact from hiking trails 3.79 acres of impacts from multi-use trail/mountain biking trails 11.28 acres of impacts from roads 21.3 acres of impacts from ski trails 4.99 acres of impacts from snowmaking pipes 5.64 acres of impacts from the summer activities zones 	<ul style="list-style-type: none"> 16.66 acres of impacts from glades 0.03 acre of impact from hiking trails 3.79 acres of impacts from multi-use trail/mountain biking trails 11.47 acres of impacts from roads 23.87 acres of impacts from ski trails 4.99 acres of impacts from snowmaking pipes 5.64 acres of impacts from the summer activities zones
	<i>Description of compliance with EO 11988 & 11990 (Floodplain)</i>	<ul style="list-style-type: none"> Given there are no proposed actions or new construction 	<ul style="list-style-type: none"> Under all Action Alternatives, adherence to specific PDC and BMPs for project design, implementation, and monitoring are necessary to comply to the CWA and Executive Orders 11990 and 11988. Refer to Table 2-4. Project Design Criteria for more information on PDC. A list of specific BMPs would be established prior to construction of 			

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	<i>Management & Protection of Wetlands, respectively) under all Action Alternatives.</i>	projects, GTR would continue to operate as they have been operating. Therefore, compliance with EO 11988 and 11990 would be achieved	the projects in coordination with TNF resource specialists and a TNF hydrologist. If PDC and specific BMPs are followed, adherence to the CWA and Executive Orders 11990 and 11988 would be achieved.			
	<i>Discussion of compliance with standards identified in the 1997 Forest Plan under all Action Alternatives.</i>	<ul style="list-style-type: none"> Given there are no proposed actions or new construction projects, GTR would continue to operate as they have been operating. Therefore, compliance with the 1997 Forest Plan would be achieved. 	<ul style="list-style-type: none"> Under all Action Alternatives, compliance with the 1997 Forest Plan would be achieved as specific PDC and BMPs are implemented. 			