



KEYSTONE

COLORADO



DERCUM MOUNTAIN IMPROVEMENTS PROJECT ENVIRONMENTAL ASSESSMENT DECISION NOTICE

APRIL 2014

USDA Forest Service
White River National Forest
Dillon Ranger District



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Decision Notice

Keystone Resort

Dercum Mountain Improvements Project

Environmental Assessment

USDA Forest Service
Dillon Ranger District, White River National Forest
Summit County, Colorado

Decision and Reasons for the Decision

After thoroughly considering the Purpose and Need for Action, issues, range of alternatives and analyses presented in the Keystone Resort Dercum Mountain Improvements Project Environmental Assessment (EA), as well as public comments that were received, **I have decided to approve Alternative 2 – the Proposed Action**. All Management Requirements identified in Table 2-3 of the EA (refer to Appendix A in this Decision Notice) are hereby required as part of this decision.

The Selected Alternative includes the following projects, all of which are identified on the attached figure.

Summit House

The Summit House is approved to be replaced with a larger, multi-story facility (approximately 20,000 square feet) with capacity for roughly 700 indoor guests and 200 outdoor guests. The Summit House will accommodate daytime and evening use, food service, ski patrol, restrooms, and ski school. The facility can also accommodate special events. The approved Summit House facility will be constructed consistent with the provisions of the Forest Service's Built Environment Image Guide (BEIG) and will incorporate energy efficient building systems.

While the exact location of the new Summit House facility has not been determined, given the previously-disturbed nature of the summit of Dercum Mountain, the EA analysis includes a large potential disturbance area to allow Keystone and the Forest Service the flexibility to identify the most suitable location.

Adventure Point

To better accommodate existing use at Adventure Point, the existing tubing area is approved to be expanded to accommodate current and future use. *No additional snowmaking is proposed or approved at Adventure Point.*

The existing yurts at Adventure Point are approved to be removed and replaced with a new permanent facility, approximately 2,500 square feet in size. The approved Adventure Point facility will better

accommodate operations and guest needs, and will include a small food and beverage service outlet, observation platform, restrooms, ticketing and storage. Keystone's long-term goal for this facility is for it to become a year-round, interactive outdoor adventure complex that integrates the tubing operations with summer programs.

The approved Adventure Point facility will be located uphill (west) of the existing yurts and is designed to minimize conflicts with existing skier circulation and infrastructure. As with the approved Summit House facility, it will be constructed consistent with the provisions of the BEIG. Utility lines for this facility will tie into the Summit House infrastructure. The location of the existing yurts will be revegetated.

Infrastructure

New water and wastewater systems are needed to support both the new Summit House and the adjacent Adventure Point tubing facility. Water and wastewater lines are approved from the summit of Dercum Mountain down *Diamond Back*, tying into existing sewer and well water services located on the Keystone Gulch Road. These new sewer/water lines will eliminate the need for the septic system, leach fields, and a sewage lagoon on NFS lands south of Adventure Point.

Teaching Area and New Carpet Lifts

The existing learning area on the southwest summit of Dercum Mountain is approved to be expanded. West of the Summit House—between the Ranger and Kokomo lifts—a new 4-acre teaching terrain is approved to be serviced by a conveyor lift.

Two other areas are approved for new teaching (carpet) lifts: 1) the lower end of Schoolmarm uphill of the top terminal of the Peru Express lift; and 2) near the mid-station of the River Run Gondola. The proposed teaching lift at the mid-station of the Gondola would supplement an existing carpet lift already in that location. The approved carpet lift uphill of the Peru Express would service a terrain park teaching area near the more advanced A-51 Terrain Park.

Family Adventure Zone

Four tree islands on the western side of Dercum Mountain are approved to be developed into a "Family Adventure Zone." Construction of the Family Adventure Zone will involve grading, tree clearing, infrastructure (e.g., electrical lines) and construction of numerous interactive features within and around the tree islands on *Schoolmarm*, *Schoolmaster* and *Hoodoo*. The project entails developing trail sections into interactive, educational, skiing/riding features for children of all ages and ability levels and their families. It is important to note that it is not intended to be a "park" (such as a terrain park), but rather to help children learn the basics of skiing and riding through an educational and interpretative process.

Jane's Journey Snowcat Skiing Egress

In order to improve egress for guests and ski patrol in Bergman Bowl, the existing *Jane's Journey* egress trail is approved to be realigned to create a groomable trail. The realigned trail will be approximately 30 feet wide and 3,500 feet long, requiring minimal tree removal and spot grading.

Keystone Gulch Snowcat Access Route

A snowcat access route is approved to connect the maintenance shop near the Mountain House base area west to Keystone Gulch Road. This dedicated snowcat access route is designed to eliminate snowcat/skier conflicts as well as reduce fuel consumption between the Outback and Mountain House. The approximately 35-foot wide route will extend for approximately 5,150 feet and will generally follow the alignment of Granny's mountain bike trail. Construction of this route will require tree removal and minimal grading. The area will be revegetated upon completion of construction.

I am requiring Keystone to coordinate the final alignment of the approved Keystone Gulch snowcat access route with the Dillon Ranger District and Summit County Government.

Mountain Bike Trails

Seven new mountain bike trails (totaling approximately 9 miles) are approved on Dercum Mountain. Approved mountain bike trails will be constructed using a combination of hand tools and machinery, and will require grading and tree removal for the length of each trail. The following approved trails are identified by number, corresponding to Figure 2 in the EA.

- MTB #1: a 3.5-mile beginner trail starting at the summit of Dercum Mountain and terminating at the base of the resort.
- MTB #2: a 1-mile intermediate route off the summit of Dercum Mountain.
- MTB #3: a 0.5-mile intermediate extension of an existing advanced trail.
- MTB #5: a 2.5-mile intermediate trail.
- MTB #6: a 0.25-mile intermediate trail providing access to Helter, an existing 3-mile intermediate trail.
- MTB #7: a 1-mile intermediate trail will improve circulation and improve trail safety by reducing usage of an existing intermediate trail in the same area.
- Girl Scout Trail extension: a new portion of the existing beginner Girl Scout trail. As the existing trail is intersected by advanced trails the design intent is to separate different ability levels and create an easier trail for intermediate riders.

The approved beginner trail (MTB #1) is approved to be approximately 8 feet wide, while the intermediate trails will be approximately 3 to 6 feet wide. Wetlands within the vicinity of the trails will be avoided or bridged.

Snowmaking Infrastructure

Existing snowmaking infrastructure that has historically accommodated coverage on *Bachelor*, *Cross Cut*, *Wild Irishman*, *Whipsaw*, and *Jack Straw* is approved to be replaced and/or expanded. Replaced and expanded snowmaking infrastructure on these heavily used trails will expedite snowmaking operations and improve snow consistency. *The amount of water currently used to provide coverage on these trails is not approved to be increased as a result of these upgrades.* All disturbed areas will be revegetated and returned to their pre-construction condition.

Background

Purpose and Need for Action

The Purpose and Need for Action is focused on improving the quality of the recreational and family-friendly experience at Keystone. Dercum Mountain is critical to the recreational experience at Keystone and improvements on the front side of Dercum Mountain are the highest priority projects from Keystone's 2009 Master Development Plan. Eight specific needs are addressed by the Proposed Action:

1. Improve On-Mountain Guest Services
2. Enhance Keystone's Ability to Provide Early Season Terrain
3. Improve Adventure Point
4. Improve Teaching/Learning Areas at Keystone's Ski and Ride School
5. Improve Upon Keystone's Family Atmosphere
6. Improve Skier Egress from Bergman Bowl
7. Separate Resort Snowcats and Guests
8. Improve Lift-Served Mountain Biking at Keystone

Decision Rationale

In reaching my decision I relied heavily upon an Interdisciplinary (ID) Team comprised of Forest Service resource specialists who analyzed the effects of the two alternatives documented in the EA. I also considered public comments received during the NOPA comment period and how the Proposed Action responds to the Purpose and Need for Action.

The ski industry is becoming increasingly competitive. This is particularly evident at the highly popular Summit and Eagle County ski areas because of their proximity to a large and active skier population

along the Front Range. Guest expectations continue to evolve and resorts must constantly focus on raising service standards and improving the overall recreational experience in order to stay relevant and viable. As noted in Chapter 1 of the EA, Keystone has made very few substantive infrastructural or qualitative improvements over the past two decades (since the Outpost Gondola was installed in 1991). The most notable improvements since that time include: the replacement of the Ruby chairlift with a detachable six-pack (2000); snowcat skiing in Little Bowl/Erickson Bowl (2003); the addition of the A-51 Terrain Park (2004); snowcat skiing on Independence Mountain (2006); and replacement of the River Run Gondola (2009).

Keystone completed a Master Development Plan (MDP) in 2009 to outline its plans for future development and improvement on NFS lands within its SUP area. The Forest Service's acceptance of the MDP indicates that planned projects were found to be generally consistent with the terms and conditions of Keystone's Forest Service-administered SUP, as well as our 2002 Forest Plan. The projects analyzed in this EA represent the priority projects out of Keystone's MDP, and the EA provides the mechanism for adequately documenting their potential impacts on the human, biological and physical environment.

While the entire range of resources are analyzed in the EA, impacts to watershed resources associated with proposed grading, vegetation removal and additional snowmaking emerged as the most critical, given the baseline conditions of sub-watershed across Dercum Mountain (e.g., Camp Creek). Due to growing concerns over potential impacts to stream health in sub-watersheds on Dercum Mountain, I required a modification to the original Proposed Action (as described in the February 2012 NOPA) mid-way through the NEPA analysis. This modification removed all additional (proposed) snowmaking coverage. (*The only snowmaking projects that remained in the Proposed Action were upgrades related to improving the reliability of the existing system.*) This modification addressed the bulk of my concerns with introducing additional snow, and therefore snowmelt, to already impacted sub-watersheds on Dercum Mountain. In addition, site-specific Management Requirements (best management practices and project design features) were developed and incorporated into the Proposed Action to further minimize or avoid impacts to watershed resources. Those Management Requirements are identified in Table 2-3 of the EA, and are carried through the analysis of watershed, soils, geotechnical stability and wetlands. I am confident that project modifications and Management Requirements have adequately addressed my, and my resource specialists', concerns.

In order for our ski area partners to continue to provide quality recreational experiences within their Forest Service-administered special use permit areas, we must continually work with them to find the appropriate mix of projects (identified through the master planning process). The Forest Service accepted Keystone's MDP in 2009. This is the first package of projects from the MDP that have undergone site-specific NEPA analysis. This was an appropriate mix of projects for Keystone to begin addressing some of its known opportunities and constraints that will have noticeable effects on the guest experience.

Other Alternatives Considered

A no action alternative was included in the EA for comparative purposes. The No Action Alternative essentially reflects a continuation of existing recreational and operational activities within Keystone's SUP area without changes, additions, or upgrades. No new recreational opportunities, facilities, snowmaking infrastructure or trail improvements are included in this alternative.

No other action alternatives were considered or analyzed in the EA. A comparison of the Proposed Action and No Action alternatives can be found in Tables 2-1 and 2-2 of the EA (pages 2-7 through 2-12).

Public Involvement

This proposal was first listed in the White River National Forest's Schedule of Proposed Actions (SOPA) on January 1, 2012. In February 2012, a Notice of Proposed Action (NOPA) was mailed to community residents, interested individuals, public agencies, and other organizations. The NOPA indicated that the Forest Service made the decision to combine the scoping process with the legal notice and opportunity to comment, as described in 36 CFR 215.3. It was specifically stated that the 30-day NOPA comment period was the only opportunity to submit formal written comments on this project. The public was asked to submit comments by March 9, 2012.

A press release and legal notice were distributed to key local and regional media. In response to the Forest Service's solicitations for public comment, four letters were received. Three of the comment submittals were generally supportive, while one comment submittal was generally opposed to the project. Most substantive comments were related to recreation and socioeconomics, although one comment was provided on water, wildlife, scenery and traffic parking and access.

After reviewing public comments, as well as internal concerns raised by Forest Service specialists, a list of issues was generated that guided the EA analysis. Issues are identified in Chapter 1 of the EA. As indicated in Decision Rationale, the required modifications to the Proposed Action, combined with site-specific Management Requirements, addressed our primary concerns regarding impacts to watershed resources.

Consistency with Other Laws and Regulations

This decision is consistent with the 2002 White River National Forest Land and Resource Management Plan (Forest Plan) as required by the National Forest Management Act and all other laws, regulations and policies that govern Forest Service actions. With modifications made mid-way through the NEPA process, the project was designed to conform to the Forest Plan and all other laws, regulations and policies. Site-specific Management Requirements (Table 2-3 of the EA) and Forest Plan standards and guidelines will be applied, as appropriate, to meet Forest Plan goals and desired conditions.

In addition, the Selected Alternative meets requirements under the following laws, regulations and policies:

- Americans with Disabilities Act (ADA) of 1990
- Clean Air Act of 1955, as amended
- Clean Water Act of 1948, as amended
- Endangered Species Act of 1973, as amended
- National Environmental Policy Act of 1969, as amended
- National Forest Ski Area Permit Act of 1986, as amended
- National Historic Preservation Act (NHPA) of 1966, as amended
- Protection of Wetlands Executive Order 11990

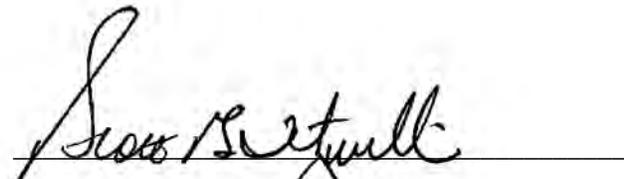
Implementation Date

The proposed project was subject to the objection process pursuant to 36 CFR 218, subparts A and B; no objections were filed within the 45-day time period. Per 36 CFR 218.12(c)(2), approval of the proposed project may occur on, but not before, the fifth business day following the end of the objection filing period, which was March 22. Therefore, Keystone may now begin implementing approved projects, subject to the Management Requirement identified in Table 2-3.

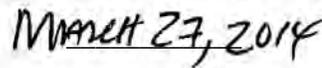
Contact

For additional information concerning this decision or the Forest Service objection process, contact:

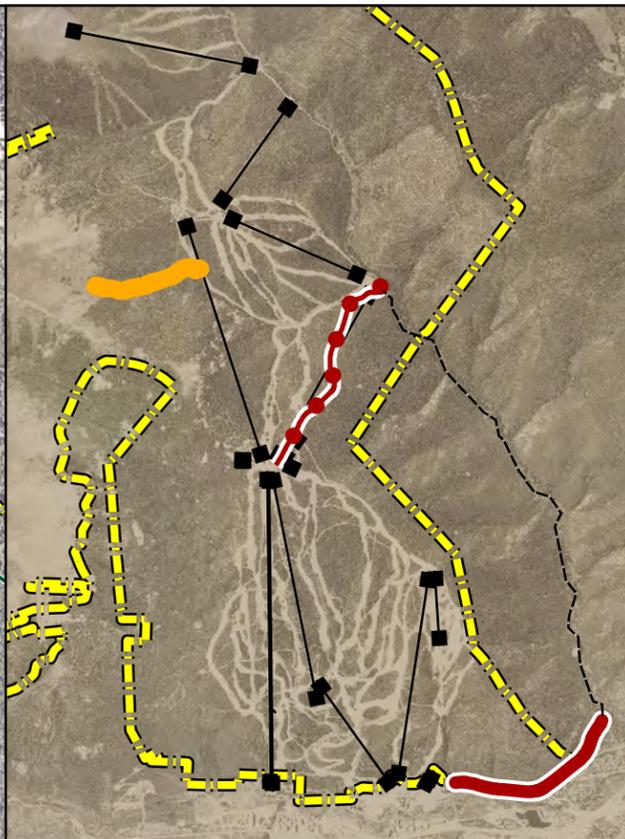
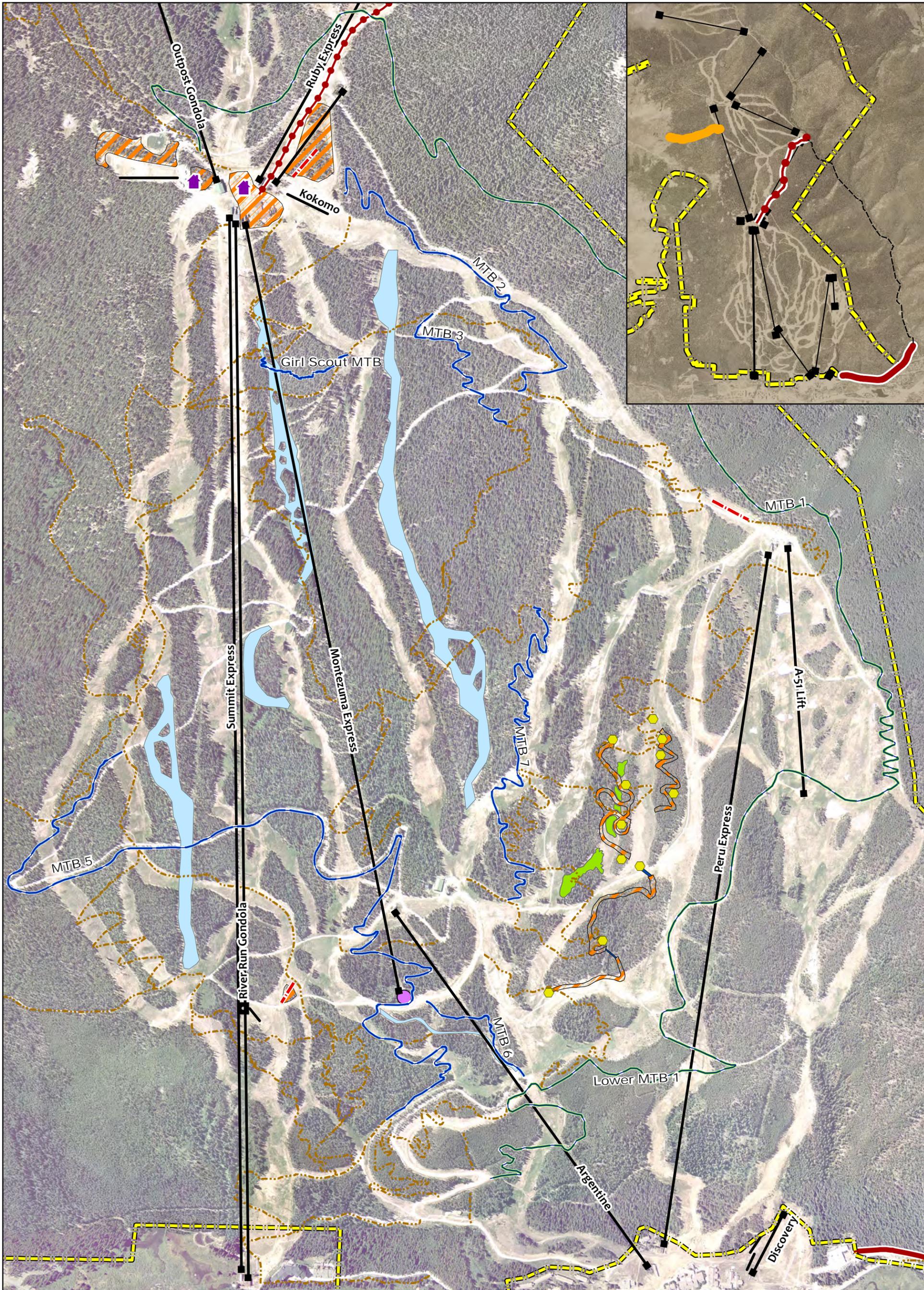
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White River National Forest Supervisor



Date



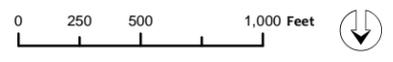
Selected Alternative

LEGEND

-  SUP Boundary
-  Existing Lifts
-  Proposed Sewer Line
-  Existing Mountain Bike Trails
-  Proposed Mountain Bike Trails-Beginner
-  Proposed Mountain Bike Trails-Intermed.
-  Proposed Composting Toilet
-  Proposed Facilities
-  Proposed Family Adventure Zone Features
-  Proposed Carpet Lifts
-  Proposed Jane's Journey Realignment
-  Proposed Snowcat Access to Gulch Rd.
-  Proposed Revegetation
-  Proposed Grading/Tree Removal
-  Proposed Improved Snowmaking Infrastructure



Prepared By: **SE GROUP**



Appendix A

Table 2-3 of the Environmental Assessment

APPENDIX A: TABLE 2-3 OF THE ENVIRONMENTAL ASSESSMENT

**Table 2-3:
Management Requirements**

CULTURAL AND HERITAGE RESOURCES
Although 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, they will be treated as specified in 36 CFR 800.11 concerning Properties Discovered During Implementation of an Undertaking.
SCENIC RESOURCES
Individual components of the Family Adventure Zone will be designed in coordination with the Forest Service Landscape Architect to ensure they are consistent with Forest Service policy for the built environment.
Facility and structure design, scale, color of materials, location, and orientation will be incorporated into proposed buildings to meet the scenic integrity objective for this Project Area and the Built Environment Image Guide guidelines.
FSM guidelines (Section 2380) and Built Environment Image Guide (BEIG) guidelines will be followed: <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., influenced by rustic, ranching, mining and railroad styles). • Architecture, materials, and colors should follow the Forest Service’s Built Environment Image Guide (BEIG).
Facilities or structures including buildings, lift terminals and chairs need to meet reflectivity guidelines. This includes any reflective surfaces (metal, glass, plastics, or other materials with smooth surfaces), that do not blend with the natural environment. They should be covered, painted, stained, chemically treated, etched, sandblasted, corrugated, or otherwise treated to meet the solar reflectivity standards. The specific requirements for reflectivity are as follows: Facilities and structures with exteriors consisting of galvanized metal or other reflective surfaces will be treated or painted 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.
Facilities or structures need to meet color guidelines. Bright colors are inappropriate for the forest setting. The colors should be muted, subdued colors because they blend well with the natural color scheme. The Forest Service Handbook 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.
VEGETATION
Where Sensitive plant species and plant species of Local Concern (SOLC) are found in the Project Area the following design criterion applies. The WRNF zone botanist will recommend to the line officer where site specific protection measures are needed, including activity restrictions (area, timing, retaining felled trees on-site to provide connectivity/linkage of habitats, etc.), such that implementation will not result in a trend toward Federal listing or loss of population viability. (Forest Plan PETS Standard #3; Forest Plan Plant Species of Viability Concern Standard #1; DR 9500-4)
Through project design, <i>Botrychium</i> populations will be identified on the ground and buffered from management actions that would directly or indirectly negatively impact population viability. While avoidance is preferred, over-snow logging may be allowed within occupied habitat. Negative impacts to <i>Botrychium</i> populations will be avoided or minimized when populations are dormant under frozen soil. Do not designate landings, burn piles and other concentrated disturbances in habitat occupied by <i>Botrychium</i> species. (Forest Plan Plant Species of Viability Concern Standard #1; PETS Standard #3; IDT; DR 9500-4)

**Table 2-3:
Management Requirements**

Re-vegetation should be completed using native species where feasible, preferably collected from local genetic stock or seed available from local Forests' Native Plant Materials programs. (Forest Plan Biodiversity Standard #1; Forest Plan Biodiversity Guideline #1; FSM 2070)
All mulch, hay and straw used shall be certified weed-free. Seed testing for noxious weed seed should be done as feasible, depending on the size of the Project Area, timing and other considerations. (Forest Plan Weeds Standard #3)
Sites with low erosion potential, suitable native seed sources nearby, and low risk of colonization by noxious weeds or other harmful invasive plant species, may be allowed to re-vegetate naturally. If these conditions do not apply or if there is a need to accelerate the natural re-vegetation process, apply erosion control measures and/or seed or plant the site according to the approved seed mix from the ski area's operating plan.
Tree clearing limits will be adequately marked to minimize mistakes in clearing limits during construction.
Any Engelmann spruce that is felled must be either removed from the area or treated within one year after felling to prevent the buildup of spruce bark beetle. Treatments can include burning, burying or peeling the bark off felled Engelmann spruce.
Any loss of riparian vegetation caused by construction activities should be re-vegetated immediately after construction with native vegetation, willow cuttings, and/or native, certified, weed free seed.
Vegetative buffers will be maintained adjacent to intermittent or perennial drainages and wetlands, to the extent possible. Where avoidance is not possible, impacts will be minimized in sensitive areas. Hand-felling should occur where necessary and feasible.
In all areas where grading or soil disturbance will occur, topsoil or other organic amendment will be stockpiled and re-spread following slope grading and prior to re-seeding where possible/practical.
Soil-disturbing activities will be avoided during periods of heavy rain, runoff, or wet soils.
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.
NOXIOUS WEEDS
To minimize the spread of noxious weeds during construction, the following measures will apply: <ul style="list-style-type: none"> a. All construction equipment will be cleaned prior to entry onto NFS land. b. Equipment may require Forest Service inspection prior to moving it from areas infested with invasive species of concern to areas free of such invasive species. Reasonable measures will be taken to make sure equipment is free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds before moving into the Project Area. c. All equipment surfaces should be cleaned, especially drive systems, tracks and "pinch points" to ensure removal of potentially invasive debris. Reasonable measures include pressure-washing or steam cleaning in an offsite location so oil, grease, soil and plant debris can be contained and provide optimal protection of Project Areas. d. A Forest Service Representative shall be notified at least 24 hours in advance of off-road equipment arriving on the Forest, to provide the option of inspecting the equipment to ensure it has been cleaned as required. e. Equipment may also require inspection prior to moving it from areas infested with invasive species of concern to areas free of such invasive species. Those areas can be identified prior to project implementation with the Forest Service Weed Program Manager. f. Reasonable measures include pressure-washing or steam cleaning in an offsite location so oil, grease, soil and plant debris can be contained and provide optimal protection of Project Areas. (Noxious Weed Standards #1 and 4 [p. 2-30])

**Table 2-3:
Management Requirements**

Existing infestations will be treated within and adjacent to travel routes prior to implementing the project to help eradicate/control existing weeds and/or suppress seed production. Method of treatment needs to be approved by the Forest Service Weed Program Manager. Travel routes include ski area access roads. (Forest Plan Noxious Weed Standards #1 and #4 [p. 2-30])
Work closely with the Forest Service to treat and monitor noxious weed infestations at Project Area construction sites for a minimum of four years after project completion. Method of treatment needs to be approved by the Forest Service Weed Program Manager. (Forest Plan Disturbance Process Standards #1-4)
WATERSHED & SOILS
Although the impacts of grading the entire extent of the Keystone Gulch snowcat access route have been analyzed and disclosed in this analysis, construction of the route will be conducted with the absolute minimal amount of grading necessary, and in coordination with Forest Service representatives.
All new/replaced snowmaking lines that cross wetlands must remain above-ground in order to avoid wetland impacts.
The new sewer line down <i>Diamond Back</i> will eliminate the need for the septic system, leach fields, and a sewage lagoon on NFS lands south of Adventure Point. Once the new sewer line is brought on-line in association with the new Summit House, the septic system, leach fields, and a sewage lagoon will be decommissioned and the area restored.
Soil surveys have been completed within the disturbance areas to ensure no net loss of soil organic matter. Keystone will work with the Forest Service Soil Scientist to re-establish depths similar to preconstruction depths of organic matter.
Prior to construction, a detailed site erosion control plan will be prepared. This plan shall include the following components: <ul style="list-style-type: none"> • Silt fences, straw bales, straw wattles, and other standard erosion control BMPs shall be employed to contain sediment onsite. • Jute-netting or appropriate erosion-control matting on steep fill slopes (i.e., land with a slope angle of 35% or greater) will be utilized to protect soils and enhance conditions for vegetation re-establishment. • Promptly revegetate disturbed areas. Seed mixtures and mulches will be free of noxious weeds. To prevent soil erosion, non-persistent, non-native perennials or sterile perennials may be used while native perennials become established. The Forest Service must approve the seed mixtures prior to implementation, unless previously approved seed mixes are employed.
Existing roads will be used for construction and routine maintenance of the proposed project components where possible.
Vegetative buffers will be maintained adjacent to intermittent or perennial drainages and wetlands, to the extent possible. Where avoidance of the vegetative buffer is not possible, disturbance will be minimized.
In all areas where grading or soil disturbance will occur, a reassessment of the quantity (depths) of soil A and/or organic ground cover would be made to ensure no net loss of this material. Re-spreading of stockpiled topsoil/A horizon material and/or the duff layer (O horizon) or where necessary applying an organic amendment would promote the successful rehabilitation of these areas in addition to promoting compliance with USFS policy direction towards soil productivity.
Ground cover, as a combination of revegetation, organic amendments and mulch applications, should restore depths of soil A and/or organic ground cover.
Keystone will work with the Forest Service soil scientist on final construction plans to ensure proper design features are incorporated.
<i>Proposed PDF Related to Mountain Bike Trail Construction</i>
Wherever possible, approved mountain bike trails will be aligned using natural topography to create grade reversals or rolling dips to facilitate maintenance-free drainage. Waterbars, ditches and cross drains will be used only when grade reversals and rolling dips are not practical.

**Table 2-3:
Management Requirements**

Routing trails directly down the fall line will be avoided. Drainage structures will be placed above steep stretches of trail to minimize the amount of water that gets routed onto steepes. In steep areas, the frequency of drainage features will be increased.
The routing of trails down the bottom of ephemeral draws or other low spots will be avoided so that water has somewhere to drain besides down the trail tread.
The number of times trails cross streams will be minimized. Where stream crossings are required, rolling dips or grade reversals will be used where trails approach streams to drain trail runoff into undisturbed soils rather than directly into streams.
Bike trails will be managed with seasonal closures, as needed, to avoid the development of ruts when soils are saturated.
When rehabilitating abandoned trails, ensure an adequate number of drainage features are installed to eliminate ongoing erosion problems. Check dams, waterbars and sediment traps will be used to keep water and sediment from running down entrenched trails.
<i>Proposed Mitigation Measures and PDF Common to all Study Watersheds</i>
Prior to construction, boundaries for tree removal, terrain grading; and wetlands and WIZs near construction sites will be clearly flagged.
Soil-disturbing actions will be avoided during periods of heavy rain or excessively wet soils (MM-9).
Cuts, fills, and road/trail surfaces will be constructed to be strongly resistant to erosion (MM-9)
Roads and other disturbed sites will be maintained and stabilized during and after construction to control erosion (MM-11)
Suitable locations for drainage features will be selected within and near graded areas and contour graded areas to disperse runoff onto ground that is stable and well vegetated.
Before grading, topsoil will be removed and properly stockpiled so it can be utilized during restoration of graded area.
Graded areas near perennial or intermittent streams, such as the Midway Teaching Carpet and FAZ trails, will be designed to minimize surface erosion and to drain runoff through adequate BMPs for sediment control (e.g., fiber logs and/or sediment traps).
Ski trail construction will be accomplished by flush-cutting trees to minimize ground disturbance.
Water bars and associated BMPs must be implemented immediately after construction of proposed graded ski trails; inspect water bars during the first snowmelt period following construction.
The downstream end of water bars will include BMPs that encourage sediment separation and dispersion of flow, such as fiber logs.
Where appropriate, disturbed areas will be re-vegetated, including new ski trails, with WRNF-approved seed mixtures.
<i>Proposed Mitigation Measures and PDF to protect the integrity of the WIZ</i>
Construction equipment will be kept out of streams, except if specifically authorized by the WRNF (MM-3).
Effects to soils will be minimized by limiting the width of skid trails to 12 feet and spacing between trails to no closer than 120 feet on average. Low p.s.i. (less than 7 p.s.i.) tracked equipment will be utilized when available (Forest Plan Soils Guidelines #4).
In order to address stream health concerns related to low wood frequency, trees will be felled into the inter-trail islands within the WIZ to improve LWD density; however, trees will be felled in a way that protects vegetation in the WIZ from damage.
Excavation, or storage of earthen material, will not occur in the WIZ.
Native vegetation will be used for streambank stabilization to the maximum extent practicable (MM-3).

**Table 2-3:
Management Requirements**

To the maximum extent possible, guests will be discouraged from skiing the interior of inter-trail islands within the WIZ to maximize vegetative growth in the riparian areas.
Water bars must be designed and constructed to discharge surface runoff originating within the proposed graded ski trails away from the WIZ and into well vegetated areas, effectively disconnecting disturbed areas from the stream network.
<i>Proposed Mitigation Measures to Offset Impacts of Water Yield Increases</i>
<ul style="list-style-type: none"> a. Successful revegetation projects will offset increases in watershed yield per the following average ratios: b. Forest revegetation (conifer trees), such as the FAZ revegetation project: once mature, conifer trees may consume approximately 1.2 to 1.4 AF/acre. This evapotranspiration ratio was modeled using WRENSS. c. Topsoil improvement and revegetation of ski trails using a WRNF-approved seed mix of native mountain grasses: approximately 1.5 AF per revegetated acre. d. Planting willows in riparian areas or where adequate shallow groundwater conditions exist: approximately 3.0 AF/acre.
<p>In order to protect long-term stream health from damage by increased runoff, implement revegetation programs on currently disturbed areas to offset water yield increases. At a minimum, the following water yield increases must be mitigated:</p> <ul style="list-style-type: none"> a. Camp Creek: 3.1 AF b. Redemption Creek: 0.4 AF c. WS #3: 0.9 AF d. WS #5: 0.2 AF e. WS #18: 1.5 AF <p>Revegetation programs must be successfully implemented in the above-mentioned watersheds in order to offset the impacts of water yield resulting from the Proposed Action.</p>
Topsoil improvement and revegetation of ski trails using a WRNF-approved mix of mountain grasses is required to be implemented on approximately 2.1 acres within the Camp Creek Watershed to offset the 3.1 AF of increased water yield. Keystone will work with the WRNF to determine the location and extent of additional revegetation projects needed to mitigate the impacts of the proposed improvements on watershed runoff. Such revegetation projects will be included in the corresponding Summer Construction Plan for review and approval by the WRNF as a condition of approval for the construction of project improvements.
GEOTECHNICAL STABILITY
Family Adventure Zone: The concern with locally increasing moisture (and thereby triggering a local slide reactivation) can be mitigated in two ways: (1) the sinuous trail should be reconfigured so that it does not cross into the Qlsy polygon, and/or (2) if the trail stays in its present configuration, waterbars should be created along it that prevent runoff from Qlsi going onto Qlsy.
Adventure Point: runoff should be prevented from the new snowtubing lanes/former tree island from draining southward. The new snowtubing lanes should be sloped gently to the north (as are the present tubing lanes), so that runoff will flow away from the graben.
Surface lift west of the Gondola mid-station: grading should be configured to divert water away from the infiltration area, and into an incised drainage or pipeline. In this case, the grading could actually have a positive effect on mountain-wide slope stability.

**Table 2-3:
Management Requirements**

Improved <i>Jane's Journey</i> trail: an inslope ditch should be created that will collect runoff and direct it west along the route, until it can be released at, or west of, the western margin of the slide area. By redirecting water off of the lower part of the slide, the egress route will increase slope stability.
MTB 1: the trail drainage at the 180-degree switchback on the moraine crest should be diverted to flow into Camp Creek, rather than being allowed to flow north onto the landslide deposit.
AIR QUALITY
To the extent feasible, site improvements should be installed promptly in order to reduce the potential for dust emissions. The area disturbed by clearing, earth moving, or excavation activities will be kept to a minimum at all times, allowing improvements to be implemented in sections.
Grading areas, including lift terminal areas, will be watered as necessary and practical to prevent excessive amounts of dust. In the absence of natural precipitation, watering of these areas will occur as practical.
WILDLIFE
During construction, contractors should provide an on-site bear proof container for all edible and food related trash in order to minimize conflicts with black bears. No food products or food containers should be thrown in the larger roll-off type dumpsters.
Raptors will be surveyed prior to implementation each year. Protect active and inactive raptor nest areas. A no-disturbance buffer around active nest sites will be required from nest-site selection to fledging (March through July).
If boreal owl nests are detected within impact areas, direct mortality of eggs and/or nestlings could be avoided by conducting tree removal in potential nesting habitat outside of the May 21 to July 15 nesting (with eggs/young) period.
If olive-sided flycatcher nests are detected within impact areas, direct mortality of eggs and/or nestlings could be avoided by conducting tree removal in potential nesting habitat outside of the June 1 and July 15 nesting period.
If American marten dens are detected within impact areas, direct mortality of current year recruitment could be avoided by conducting tree removal in potential denning habitat outside of the March 1 to June 15 period.
The 3,500-foot long, rerouted <i>Jane's Journey</i> egress trail will be no more than 30 feet wide.
During construction of the rerouted <i>Jane's Journey</i> trail: <ul style="list-style-type: none"> • To the extent possible, when configuring the trail's alignment without compromising the functional character of the trail, existing meadows, forest gaps, and openings between trees will be exploited to minimize tree removal and maintain canopy closure above the trail. • The removal of sapling and pole stage spruce and fir that have live branches within 6 feet of the ground and will be minimized, and areas where the understory has greater than 35% horizontal cover will be avoided. This represents snowshoe hare foraging habitat. • Dense patches of snowshoe hare foraging habitat will be avoided. • Once the skier's right and left sides of the trail are flagged, site survey will be conducted with Keystone personnel and a Forest Service wildlife biologist to confirm optimal trail alignment.
All construction activities should be confined to daylight hours, excluding emergencies.
Construction workers are prohibited from bringing dogs to the construction site.
All vehicle windows should be kept closed and doors locked on all vehicles to prevent bear entry.

**Table 2-3:
Management Requirements**

The Keystone Gulch Road closure will continue to be implemented, where, starting at the proximal end of the road, the road is closed with a locked gate and closed to all activity from May 15 to June 15 (for elk calving) except for required spring runoff and erosion control work.

Under Alternative 2, 19.3 acres of lynx habitat would be affected on NFS lands. All or a portion of this habitat loss should be offset by enhancing lynx and snowshoe hare habitat within the Snake River LAU or within contiguous LAUs by planting trees, decommissioning roads, and other beneficial silvicultural practices. A Forest Service wildlife biologist will outline practices for implementation. *This conservation measure is not needed for consistency with SRLMD.*