3.0 AFFECTED ENVIRONMENTAL, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

This section presents the following information: (1) an upfront summary of the comparative effects of the No Action, Proposed Action, and Alternative 1 options evaluated in the EA; (2) a description of the Affected Environment that defines the environmental baseline and existing conditions for resources potentially affected by the project; (3) an Environmental Consequences analysis evaluates the potential effects to those resources under the No Action, Proposed Action, and Alternative 1 options; and (4) a description of Mitigation Measures that would be taken to reduce or eliminate potential project impacts.

3.1 Comparison of Alternatives

This section provides a summary of the effects of implementing the No Action, Proposed Action, and Alternative 1 options. Table 4 focuses on activities and resources where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

The primary effects of the Proposed Action and Alternative 1 are associated with potential impacts at the avalanche control building location, as summarized above; secondary effects would be associated with the discharge of explosives in the avalanche release zone. These secondary effects would be similar to those under the No Action alternative, and would principally be related to biology and water quality. To evaluate potential impacts to biological and water quality resources in the release zone, the following studies and surveys were performed:

- **2007 Avalanche Release Zone Vegetation Survey:** Biological surveys were performed in the avalanche release zone in 2006 and 2007 to assess the effects of the proposed avalanche control methods (i.e., howitzer use) on vegetation in the area. Surveys were conducted both prior to and following howitzer operations (NewFields 2007b). The survey results and subsequent statistical analyses indicated that the effect of howitzer use on vegetation was insignificant. Further, the surveys/analyses concluded that when high snow cover was present (as per normal operating conditions), effects would be even less.

- **2006 and 2007 Butterfly Survey Reports:** Of particular concern in the LVSSR area as a whole, is the potential for any activity to impact the Mt. Charleston blue butterfly *(Icaricia shasta charlestonesis)*, or habitat for its primary host plant, Torrey's milkvetch *(Astragalus calycosus* var. *calycosus)*. Butterfly surveys

Table 4. Comparison of Alternatives

Resource/ Issue	No Action*	Proposed Action	Alternative 1
Biology and Biodiversity Hotspot	No effects, since site condtions would not be altered.	Permanent loss of 0.102 acres of habitat (0.003 percent of total Biodiversity Hotspot). Temporary disturbance of 1.445 acres of habitat (0.048 percent of total Biodiversity Hotspot). Total disturbance of 1.547 acres of habitat (0.052 percent of Biodiversity Hotspot). No substantive effect on threatened, endangered, or rare plant or animal species.	No permanent loss or temporary disturbance of habitat, since the location of avalanche control building would be on a paved and previously disturbed turnaround area. Consistent with the USFS SMNRA Plan Objectives 11.23 and 11.59, which emphasize use of currently disturbed areas when expanding recreational facilities. No effect on threatened, endangered, or rare plant or animal species.
Cultural Resources	No effects on since site condtions would not be altered.	No cultural resources were located during field surveys. No cultural resources would be affected.	Effects would be the same as Proposed Action.
Water Quality	No effects, since site condtions would not be altered.	Potential short-term and temporary increase in erosion and sedimentation due to construction. Effects negligible and can be mitigated with implementation of BMPs and conservation elements.	Effects would be the same as Proposed Action, but slightly decreased due to reduced disturbed area.

Table 4. Comparison of Alternatives

Resource/ Issue	No Action*	Proposed Action	Alternative 1
Noise	No increased effects, since past avalanche control methods would be used.	Effects would be the same as Alternative 1.	Noise levels generated per shot could increase, but frequency of shots per season would be reduced by one-half. Noise effects to nearest sensitive receptors would be negligible (60 to 80 decibels per shot). Noise levels due to construction site would be negligible, short-term, and temporary.
Visual Resources	No effects, since site condtions would not be altered.	Visual effects due to avlanche control building are minor and consistent with Developed Canyons (Area II) guidelines. Effects can be mitigated through use of USFS-approved color pallet and materials for construction; partial screeing provided by trees and vegetation at most viewpoints. Construction-related effects short-term, temporary, and mitigated during construction cleanup.	Visual effects due to avalanche control building slightly greater than Proposed Action, since the building would be located adjacent to SR 156 and in a more visible area, but still consistent with Developed Canyons (Area II) guidelines. Effects can be mitigated through use of USFS-approved color pallet and materials for construction; partial screening provided by trees and vegetation for some viewpoints.

Table 4. Comparison of Alternatives

Resource/ Issue	No Action*	Proposed Action	Alternative 1
Land Use & Recreation	No effects, since site condtions would not be altered.	Long-term and beneficial effects associated with increased safety and improved recreational experience of LVSSR users due to improved avalanche control.	Effects would be the same as Proposed Action. Location of avalanche control building would be on a paved and previously disturbed turnaround area.
		Short-term and temporary construction dust increase. Effects would be negligible and can be mitigated with implementation of BMPs and conservation elements.	Consistent with the USFS SMNRA Plan Objectives 11.23 and 11.59, which emphasize use of currently disturbed areas when expanding recreational facilities.

* The compressed nitrogen launch system and hand placement of charges would be used for avalanche control. The avalanche control building and associated infrastructure would not be constructed and the howitzer would not be operated.

performed in the avalanche release zone in 2006 and 2007 (NewFields 2006a, 2007c) indicated that there were no butterflies or host plant habitat in the area; therefore, no effects are expected to occur.

- **Screening-Level Ecological Risk Assessment (SLERA):** To address the potential ecological effects of explosive charge residue in the avalanche release zone, a risk assessment (SLERA) was performed in 2006 (NewFields 2006b). The SLERA found that: (1) the level of residue in soil would not be at concentrations that would be of toxicological concern, (2) the level of residue in snow melt would not be expected to pose risk to ecological receptors, and (3) no effects are expected to occur to the Mt. Charleston blue butterfly, other butterfly species, plant species of concern, or other invertebrates even at the anticipated maximum level of avalanche control activities. Thus, potential effects to both biological and water quality resources due to explosive residue are considered to be negligible.

Given the findings of negligible effects/insignificant impacts to the avalanche release zone as analyzed by the surveys and studies discussed above, further analyses or discussion of this topic are not included in the EA. Rather, the above studies are incorporated into this EA by reference as allowed by NEPA in accordance with 40 CFR 1502.21, which states in part: *"Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described."*

All studies and surveys referenced above are available for inspection at the USFS's offices upon request.

3.2 Biological Resources

This section discusses the existing environmental conditions and potential effects of the No Action, Proposed Action, and Alternative 1 options on biological resources. Additionally, mitigation measures are provided to minimize or reduce effects to these resources. The baseline, or affected environment, is based primarily on a biological assessment/evaluation (NewFields 2005a) and specialist report (NewFields 2005b), as well as findings by Jones and Stokes (2005a, b).

3.2.1 Affected Environment

Biological resources in the project area include common plants and wildlife, as well as sensitive and rare species. In addition, proposed project is located within the Very High Priority Upper Lee Canyon Biodiversity Hotspot.

3.2.1.1 Botanical Resources

The project area is located in the High Conifer Forest and Woodland Zones, which occur in a contiguous region surrounding Mt. Charleston and its high connecting ridges. The High Conifer Forest and Woodland Zones contain large woodlands of mountain-mahogany, and mixed conifer forests. The forest begins at about 7,510 feet (2,290

meters), and by 8,500 feet (2,590 meters) it also includes limber pine (*Pinus flexilis*), white fir (*Abies concolor*), bristlecone pine (*Pinus longaeva*) in the overstory, and common juniper (*Juniperus communis*) in the understory. Small Aspen (*Populus tremuloides*) stands occur above 7,800 feet (2,380 meters) (Charlet 1998). The plant community of the project area includes three plant associations as described by Nachlinger and Reese (1996):

- The White Fir-Ponderosa Pine-Curlleaf Mountain Mahogany Series is found at elevations ranging from 7,086 to 9,284 feet (2,160 to 2,830 meters). The prevalent vegetation is woodland and forest dominated by a mix of conifers and evergreens. The dominant plants are white fir and ponderosa pine.
- The Quaking Aspen-White Fir Association is found at elevations ranging from 7,677 to 9,612 feet (2,340 to 2,930 meters). The prevalent vegetation is woodland and occasional forest dominated by a mix of conifers, cold-deciduous and evergreen trees. The dominant plants are quaking aspen and white fir.
- The Limber Pine-White Fir Series is found at elevations above 8,200 feet (2,500 meters) and the prevalent vegetation is woodland with occasional forest or sparse woodland. The series is dominated by a mix of conifers, and the dominant plants are white fir and limber pine.

In the vicinity of the proposed project, tree coverage is sparse, with open areas that have plant coverage of 40 to 60 percent (NewFields 2006c). Plant species observed within this area during field reconnaissance include the following:

- Trees: White fir (*Abies concolor*), Ponderosa pine (*Pinus ponderosa*), and Aspen (*Populus tremuloides*).
- Shrubs: Goldenrod (*Chrysothamnus gramineus*), Wax Currant (*Ribes cereum*), and Desert snowberry (*Symphoricarpos longiflorus*).
- Forbs: King's rosey sandwort (*Arenaria kingii* spp. *rosea*), *Draba* sp., Wyoming paintbrush (*Castilleja linearifolia*), Canadian horseweed (*Conyza canadensis*), Clokey's fleabane (*Erigeron clokeyi*), Sulpher flower buckwheat (*Eriogonum umbellatum* var. *subaridum*), Cooper's rubberweed (*Hymenoxys cooperi* var. *cooperi*), Nuttall's linanthus (*Leptosiphon nuttallii* ssp. *nuttallii*), Prairie flax (*Linum lewisii* var. *alpicola*), Charleston lousewort (*Pedicularis semibarbata* var. *charlestonensis*), Eaton's Penstemon (*Penstemon eatonii*), Coville's Phlox (*Phlox covillei*), Lemmon's cinquefoil (*Potentilla crinita* var. *lemmonii*), and Mono Groundsel (*Senecio flaccidus* cf. var. *monoensis*). The graminoids include: *Bromus* sp., *Carex* sp., Colorado fescue (*Festuca* cf. *brachyphylla* var. *coloradensis*), Mutton grass (*Poa fendleriana*).

3.2.1.2 Wildlife Resources

Field visits were made in conjunction with other studies to assess wildlife in the LVSSR area, which included the project site. The focus of the field visits was to identify potential habitat for listed, proposed, or sensitive wildlife species. Based on these field visits and consultation with the U.S. Fish and Wildlife Service, the area was determined

to contain potentially suitable habitat for 19 sensitive animal species, including 6 butterfly species, 3 bird species, and 10 mammal species. Further detail on these species is provided in Section 3.2.1.3.

3.2.1.3 Sensitive Species

Sensitive species are defined as those included on the: (1) Regional Forester's Region 4 list, (2) Species of Concern list in the Conservation Agreement for the Spring Mountains National Recreation Area, and (3) Covered Species list in the Clark County Multiple Species Habitat Conservation Plan (MSHCP), as well as those protected under the Nevada Revised Statutes. No threatened and endangered species were identified within the project area.

The sensitive plant and animal species with potential to occur within the proposed project area are shown in Table 5. Of particular interest are the following:

- Two special status plant species were found in the proposed action access vicinity: Rosy King's sandwort *(Arenaria kingii* spp. *rosea)* and Charleston pinewood lousewort *(Pedicularis semibarbata* var. *charlestonensis)*.
- The Mt. Charleston blue butterfly *(Icaricia shasta charlestonesis)*, as well Torrey's milkvetch *(Astragalus calycosus* var. *calycosus)*, a primary host plant for this butterfly, may potentially occur in the project area.
- Although the Northern Goshawk *(Accepiter gentilis)* has the potential to occur in the project area, surveys conducted in 2004, 2005, 2006, and 2007 (NewFields 2007d) found no individuals or nests.
- The Flammulated owl *(Otus flammeolus)* has the potential to occur in the project area, and surveys conducted in 2004, 2005, 2006 and 2007 (NewFields 2007d) noted a lone individual animal occurring at the lower elevations of the LVSSR in 2005 and 2006.

Table 5. Sensitive Species and Potential Effects

Common Name	Scientific Name	Status[1]	Potential Effects
Charleston pinewood lousewort	*Pedicularis semibarbata var. charlestonensis*	Sensitive	Loss and/or degradation of habitat and topsoil. Direct loss of individuals due to grading.
Charleston beardtongue	*Penstemon leiophyllus var. keckii*	Sensitive/Species of Concern	
Charleston kittentails	*Synthyris ranunculina*	Sensitive/Species of Concern	
Charleston tansy	*Sphaeromeria compacta*	Sensitive/Species of Concern	
Rosy King's sandwort	*Arenaria kingii spp. rosea*	Sensitive/Species of Concern	
Bristlecone pine and other conifer species	*Pinus longaeva, and other conifers*	Protected	
Morand's checkerspot butterfly	*Euphydryas anicia morandi*	Covered	
Spring Mountains comma skipper	*Hesperia comma*	Covered	

Table 5. Sensitive Species and Potential Effects

Common Name	Scientific Name	Status[1]	Potential Effects
	mojavensis		
Nevada admiral	*Limenitus weidemeyerii nevadae*	Covered	
Spring Mountains icarioides blue butterfly	*Icaricia icarioides austinorum*	Covered	
Mt. Charleston blue butterfly	*Icaricia shasta charlestonensis*	Covered	
Carole's silverspot butterfly	*Speyeria zerene carolae*	Covered	
Peregrine Falcon	*Falco peregrinus anatum*	Species of Concern	
Flammulated Owl	*Otus flammeolus*	Species of Concern	
Northern goshawk	*Accipiter gentilis*	Species of Concern	Potential loss of foraging habitat. No known affect on individuals or nests.
Allen's big-eared bat	*Idionycteris phyllotis*	Species of Concern	Puddles may attract individuals to construction areas.
Silver-haired bat	*Lasionycteris noctivagans*	Covered	
Western small-footed myotis	*Myotis ciliolabrum*	Species of Concern	
Long-eared myotis	*Myotis evotis*	Covered	
Fringed myotis	*Myotis thysanodes*	Species of Concern	
Long-legged myotis	*Myotis volans*	Covered	
Yuma myotis	*Myotis yumanensis*	Species of Concern	Loss of nesting and roosting sites. Loss of foraging habitat. Construction noise and activity could affect breeding activity.
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	Species of Concern	
Spotted bat	*Euderma maculatum*	Species of Concern	
Palmer's chipmunk	*Tamais palmeri*	Covered	Loss of potential maternity, hibernating, roosting and foraging habitat due to loss of trees and habitat. (proposed action only)

[1] Status: Covered=species protected under the MSHCP.
Protected=species protected under Nevada Revised Statutes.
Sensitive=species listed by the USFS.
Species of Concern=species protected under the U.S. Fish & Wildlife Service and SMNRA Conservation Agreement.

3.2.1.4 Biodiversity Hotspots

The proposed project occurs within the 2,997.3-acre Very High Priority Upper Lee Canyon Biodiversity Hotspot. Biodiversity hotspots are defined in the Nature Conservancy Spring Mountains National Recreation Area Biodiversity Hotspots and Management Recommendations (The Nature Conservancy 1994) document, and as a result of interagency agreements, they are managed in accordance with direction set forth

in the MSHCP and the Conservation Agreement (CA). Biodiversity hotspots are defined in the MSHCP and identified within the CA; both of these documents, as well as the USFS SMNRA General Management Plan, specify the avoidance of species of concern and their habitats within these areas.

3.2.2 Environmental Consequences

This section discusses the potential effects and environmental consequences of the No Action, Alternative 1, and Proposed Action alternatives on biological resources discussed above.

3.2.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated. No additional effects to biological resources would occur, as current site conditions would not be altered and avalanche control methods used in the past would be employed.

3.2.2.2 Proposed Action

Approval of the Proposed Action would result in the construction of the avalanche control building and the associated utilities and access road as described in Section 2.2. The building would be constructed in a currently undisturbed area located approximately 200 to 300-feet northeast and down gradient of the existing SR 156 highway turnaround area (Figures 1 and 2).

Construction of a new access road would be required in a presently undisturbed area from the turnaround to the building site. Utilities would be installed in a previously disturbed area adjacent to the existing highway, and also adjacent to the new access road.

Botanical Resources

The construction associated with the Proposed Action would result in the disturbance of a total of approximately 1.547 acres of previously undisturbed habitat. Potential effects would consist of the permanent loss of approximately 0.102 acres of undisturbed, common, and locally widespread vegetation communities, and the temporary disturbance of approximately 1.445 acres of these communities. Included in these communities are three species of trees that could potentially be removed: White fir (*Abies concolor*), Ponderosa pine (*Pinus ponderosa*), and Aspen (*Populus tremuloides*).

Disturbance of the area may also make it vulnerable to non-native plants, invasive species, and noxious weeds if not controlled by mitigation. Seeds are readily introduced to these areas via construction equipment that has been in other areas where undesirable plants are present. Seed or plant material may become lodged between tire treads or in cracks and crevices on the underside of the vehicle. Weed invasion could decrease biological diversity, out-compete native species, reduce water quality, increase fire risk, and adversely effect native wildlife.

Wildlife Resources

The primary impact of the Proposed Action on wildlife resources would be due to construction-related effects on wildlife habitat, which would include the permanent removal of 0.102 acres and temporary disturbance of 1.445 acres. In addition, clearing, grading and trenching could result in the direct destruction of some forms of wildlife. However, these effects would be limited to small, burrowing animals unable to avoid construction activities. Larger, more mobile animals would be able to avoid initial construction disturbances and move to adjacent, undisturbed areas.

Sensitive Species

Botanical Resources

Potential effects of the Proposed Action to sensitive biological resources would primarily be related to the removal and temporary disturbance of previously undisturbed habitat as discussed above, and also to the introduction of non-native species, invasive plants, and noxious weeds. Sensitive plant species that could potentially exist in the project area are discussed in Section 3.2.1.3 and listed in Table 5. Specifically, two special status plant species were observed in the close proximity to the proposed action access alignment included the: Rosy king'sandwort *(Arenaria kingii* spp. *rosea)*, and Charleston pinewood lousewort *(Pedicularis semibarbata* var. *clokeyanus)*.

No threatened or endangered plant species were identified in the project area; and, therefore, no effects to such species are expected to occur.

Wildlife Resources

As previously discussed, the primary negative effects on wildlife species would be associated with the loss of habitat. For a broad description of the sensitive wildlife species that could potentially occur in the project area refer to Table 5 and the discussion in Section 3.2.1.3 of this document. More specifically, the following effects to sensitive species could potentially occur as a result of the implementation of the Proposed Action:

- Temporary loss of habitat, specifically the loss of larval host plants and nectar host plants, could potentially impact six butterfly species, including the Mt. Charleston blue butterfly *(Icaricia shasta charlestonensis)*.
- Tree removal may reduce: (1) roosting and nesting sites for five bird species that may inhabit the project area, (2) bat roosting sites, and (3) cover and burrowing sites for chipmunks.

Implementation of the Proposed Action would not substantially reduce or diminish habitat or threaten to eliminate any endangered, threatened or rare wildlife species populations; the total amount of project related disturbance represents only 0.052 percent of potential habitat in the Biodiversity Hotspot (refer to the discussion on Biodiversity Hotspots below).

Biodiversity Hotspots

The Very High Priority Upper Lee Canyon Biodiversity Hotspot encompasses 2,997.3 acres, a portion of which is within the LVSSR Special Use Permit Area. The Proposed Action is included in the Biodiversity Hotspot, and its implementation would result in:

- A permanent disturbance of 0.102 acres (0.003 percent of the total Hotspot acreage);
- A temporary disturbance of 1.445 acres (0.048 percent of the total Hotspot acreage); and
- A total disturbance of 1.547 acres (0.052 percent of the total Hotspot acreage).

While the potential for project-related effects are expected to be negligible due to the small relative percent of Hotspot disturbance, mitigation described in Section 3.2.3 of this document as well as the measures included in the AMVP (NewFields 2006c) would be implemented to further reduce the potential for project-related effects.

3.2.2.3 Alternative 1

Alternative 1 is identical to the Proposed Action except for the location of the avalanche control building. As shown in Figures 1 and 2, under Alternative 1 this building would be located on the paved highway turnaround area just off of SR 156 (the main road to the ski resort). Since the building would be located immediately adjacent to the highway, no new access road would need to be constructed. Similar to the Proposed Action, utilities would be installed in previously disturbed areas adjacent to SR 156; however the building location would be closer to the Lodge (the utility source), and the total length of the utility corridor would be about 200 to 300 feet shorter.

Botanical Resources

Construction of Alternative 1 would not result in: (1) any permanent loss of habitat, or (2) the temporary disturbance of previously undisturbed habitat. As such, potential effects to botanical resources (including sensitive plant species) would be negligible to non-existent. Under Alternative 1:

- The avalanche control building would be located on an existing paved area, and no botanical resources would be disturbed during construction.
- Utilities would be located adjacent to the main road, and installed in an area that has been previously disturbed due to construction of the original roadway.
- Potential for Introduction of non-native plants, invasive species, and noxious weeds into native vegetation communities as a result of construction activities would be extremely unlikely.

Wildlife Resources

As previously described, effects to wildlife and sensitive wildlife species would be principally related to removal or disturbance of their habitat. Given that potential effects to habitat would be negligible to non-existent as discussed above, potential effects to wildlife resources could also be expected to be negligible.

Direct effects to the species themselves could potentially occur during construction of the structure or the installation of utilities. However, it is expected that animals would avoid these activities and re-locate to adjacent areas during the construction process. Thus, any such effects would be short-term and temporary, and are considered to be negligible.

Biodiversity Hotspots

While Alternative 1 would be located within the Very High Priority Upper Lee Canyon Biodiversity Hotspot, it would not result in any permanent removal or temporary disturbance of the habitat within the Hotspot, and hence no effects to the Hotspot would be expected to occur.

3.2.3 Mitigation Measures

3.2.3.1 Proposed Action

The project conservation elements as described in Section 2.2.4 of this document would be implemented to prevent or minimize potential project-related effects for all identified botanical and wildlife resources.

In areas disturbed due to construction, native vegetation would be allowed to regenerate through a combination of passive natural recruitment processes, that would be tracked using data and post-construction restoration and monitoring measures described in the AMVP (NewFields 2006c). The AMVP is consistent with the CA and the MSHCP.

3.2.3.2 Alternative 1

Under Alternative 1, the potential for effects to biological and wildlife resources is expected to be substantially less than that of the Proposed Action, and are considered to be negligible. In addition, the mitigation measures outlined earlier would be implemented as applicable to ensure that effects would not occur..

3.3 Cultural Resources

The following section discusses cultural resources and compliance with the National Historic Preservation Act (NHPA). Title 36 CFR Part 60.4 provides guidelines for eligibility of archaeological and historical sites for listing on the National Register of Historic Places (NRHP). The NRHP criteria stipulate that sites must be assessed for integrity of location, design, setting, materials, workmanship, feeling and association. A site may be considered eligible for the NRHP if it retains sufficient integrity of the elements above and if it: (1) is associated with events that have made a significant contribution to the broad patterns of our history, (2) is associated with the lives of persons significant in our past, (3) embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction, or (4) it yields, or may be likely to yield, information important in prehistory or history (NPS 1997).

3.3.1 Affected Environment

Little is known regarding prehistoric occupations in the project area. Sites recorded elsewhere in the Spring Mountains indicate utilization of the region since the Middle Archaic. Most sites are located in the foothills adjacent to the Las Vegas and Pahrump Valleys. Ethnographic information indicates that the Southern Paiute utilized the mountains for hunting and for pine nut collecting (Steward 1938). After Euro-Americans and other groups entered the project area in the mid 19th century, some mining activity

occurred in the Charleston District, and logging became important to the economy of the Las Vegas Valley.

A Class I literature review conducted at the Harry Reid Center for Environmental Studies and examination of the USFS files indicated that only two sites are located within 1 mile of the project, and no archaeological sites are located directly within the project area. Field reconnaissance also produced negative results (Sprowl and DuBarton 2005).

3.3.2 Environmental Consequences

3.3.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated. No additional effects to cultural resources would occur, as current site conditions would not be altered and avalanche control methods used in the past would be employed.

3.3.2.2 Proposed Action

Given that no cultural resources were located during field reconnaissance, the USFS made a recommendation that stated that the proposed project would have no effect on historic properties on August 24, 2005. The State Historic Preservation Office concurred with the USFS in a letter dated September 15, 2005.

3.3.2.3 Alternative 1

The findings of the USFS and State Historic Preservation Office for the Proposed Action would also be applicable to Alternative 1, and no effects on historic properties would be expected. Additionally, Alternative 1 would result in fewer disturbances than the Proposed Action, and would be located on the previously disturbed and currently paved highway turnaround area.

3.3.3 Mitigation Measures

Because no cultural resources were found during field reconnaissance, no additional mitigation measures are warranted for either the Proposed Action or Alternative 1.

3.4 Water Quality

The following section provides a discussion of relevant issues related to potential water quality issues under the No Action, Proposed Action, and Alternative 1 options. Additionally, mitigation measures are proposed to prevent or minimize project-related effects.

3.4.1 Affected Environment

The project area includes a small portion of the Upper Lee Canyon drainage, which occasionally may flow into the Las Vegas Wash and into the Las Vegas Valley. Runoff due to snow melt and precipitation from storm events represents the primary sources of

surface water at the site. There are no wetlands or pools onsite, and no permanently flowing drainages or streams occur within the project area.

The principal water quality issues in the project area would be associated with the sedimentation of surface water runoff from erosional processes. While such erosion is generally low due to satisfactory vegetation conditions, minor natural erosion occurs along the slopes, rills, and gullies that exist in the project area.

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated. No additional effects to water quality resources would occur, as current site conditions would not be altered and avalanche control methods used in the past would be employed.

3.4.2.2 Proposed Action

As shown on Figures 1 and 2, construction of the building would occur in an undisturbed area approximately 200 to 300 feet northeast and down gradient of the existing SR 156 highway turnaround.

Construction of a new access road from the turnaround area to the site would be required. Utilities would be installed in a previously disturbed area adjacent to the existing highway, and also adjacent to the new access road. The total amount of area disturbed by construction activities is estimated to be approximately 1.547 acres.

Ground disturbance associated with construction activities may increase erosion potential and subsequent sedimentation of surface water runoff during the construction period. However, due to the relatively small area affected and the short-term and temporary nature of construction, effects on water quality due to sedimentation are expected to be negligible and would be minimized through mitigation as described in Section 3.4.3.

3.4.2.3 Alternative 1

Alternative 1 is identical to the Proposed Action except for the location of the avalanche control building. Under Alternative 1:

- The building would be located on the paved highway turnaround area just off of SR 156 (Figures 1 and 2);
- Construction of a new access road would not be required; and
- The length of the utility corridor would be 200 to 300 feet shorter.

Alternative 1 is expected to result in a decreased area of construction-related disturbance, since no access road would be needed and the utility corridor would be shorter. As a consequence, the potential for erosion and sedimentation would be slightly decreased,

and water quality effects would be expected to negligible and less than the Proposed Action. Similar to the Proposed Action, potential effects due to erosion and sedimentation would be minimized through mitigation as discussed in Section 3.4.3.

3.4.3 Mitigation Measures

3.4.3.1 Proposed Action

The project conservation elements as described in Section 2.2.4 of this document would be implemented to prevent or minimize potential project-related water quality effects due to erosion and sedimentation during construction. Such elements would be primarily consist of the implementation of erosion control BMPs and good engineering practice during construction as described in that section.

3.4.3.2 Alternative 1

Under Alternative 1, the potential for erosion-related water quality effects is expected to be negligible and less than that of the Proposed Action. In addition, the mitigation measures outlined in the conservation elements of Section 2.2.4 would be implemented as applicable to ensure that effects are minimized to the extent feasible.

3.5 Noise

The following section provides a discussion of: (1) existing noise conditions, (2) potential noise conditions under the No Action, Proposed Action, and Alternative 1, and (3) any measures needed to mitigate project-related noise.

3.5.1 Affected Environment

The existing noise environment at the LVSSR is primarily influenced by the ski area equipment (e.g., chair lifts and snowmaking activities), the current avalanche control system, the number of visitors present, the visitor parking lot, proximity to SR 156, and nearby recreational facilities such as picnic areas and campgrounds.

Current avalanche control missions are generally conducted in the early morning hours (prior to opening the ski area), from late December through early February. On rare occasions, missions they may be performed during the months of October through November or March through April.

3.5.2 Environmental Consequences

3.5.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated.

No additional noise effects would occur, as avalanche control methods used in the past would be employed, which include an average of 12 control missions per season, and 30

shots per mission (totaling 360 shots per season). Approximately 1 kg of explosive would be used for each shot, for a total explosive payload delivery of about 360 kg per season, approximately the same as for the Proposed Action and Alternative 1.

3.5.2.2 Proposed Action

Under the Proposed Action, the number of avalanche control missions conducted per year would remain the same as for the No Action alternative (12 missions per year). However, due to the increased accuracy of the howizter, the number of shots per mission would be reduced by 50 percent (15 shots per mission), for a total number of shots per season of approximately 180. Approximately 2 kg of explosive would be used for each shot, for a total explosive payload delivery of about 360 kg per season, approximately the same as for the No Action alternative and Alternative 1.

Noise levels under the Proposed Action are expected to be similar to those measured for Alternative 1, since the location of the Proposed Action is within approximately 200 to 300-feet from that alternative; as such, potential noise effects to sensitive receptors during both operation and construction are expected to be negligible. Refer to the following Section 3.5.2.3 for a description of noise measurement results and analysis.

3.5.2.3 Alternative 1

Under Alternative 1, the howizter would be operated from an avalanche control building located on the SR 156 highway turnaround area. The number of control missions conducted per year, the number of shots per mission, and the total amount of explosives used per season would be the same as for the Proposed Action.

Users of the ski area would not typically be affected by noise generated from avalanche control activities, since the missions would occur in the early morning hours when the ski area is closed to visitors. Additionally, avalanche control activities would not likely affect users of the picnic and campground areas, since missions would not be conducted during the peak use periods of these areas. The nearest sensitive receptors anticipated to be affected by avalanche control activities would be the year-round occupants of the Lady of Snow and Pinyon Cabin residences, located approximately 5,400 and 1,100-feet, respectively, from the project launch site.

Noise measurements were taken at these locations while conducting avalanche control test missions using the howitzer as per the current USFS Temporary Authorization methods (identical to Alternative 1 except that the howitzer was operated from an outdoor mount); noise levels were measured using a scale closely approximating the human ear. The results of the measurements indicated that instantaneous noise levels from individual shots ranged from about 60 to 80 decibels. By comparison, Occupational Safety and Health Administration reports 85 decibels as the noise level in a closed automobile in city traffic. The same noise level is also comparable to the noise from closing a car door or opening a full can of soda, as measured from a distance of 6 feet (NewFields 2007e).

Due to the low levels of noise measured at sensitive receptor sites, potential noise effects to users and residents of the area resulting from avalanche control missions are expected to be negligible. It is expected that partially enclosing the howitzer during operation

would further decrease sounds levels by providing a structural buffer and directing the sound away from the sensitive receptors.

In addition to noise associated with avalanche control missions, noise would be generated during construction of avalanche control building and associated infrastructure. Such noise would be short-term and temporary, and noise-related effects from construction are expected to be negligible.

3.5.3 Mitigation Measures

Since noise measurements indicated low levels of noise at sensitive receptor sites, and the potential for effects is considered to be negligible, no mitigation measures are proposed for either the Proposed Action or Alternative 1.

3.6 Visual Resources

Visual resources include the natural and manmade features that give a particular environment its aesthetic qualities. Together, they form the overall impression of an area, referred to as its visual character. Landforms, water surfaces, vegetation, and manmade features are treated as characteristic of an area if they are inherent to the formation, structure, and function of the landscape. The following section provides a discussion of the visual characteristics of the No Action, Proposed Action, and Alternative 1 options that evaluates whether they would be compatible with the existing setting or would contrast noticeably and appear visually intrusive.

To evaluate the potential for visual effects for both the Proposed Action and Alternative 1, photographs and visual simulations were prepared for the avalanche control building, the most visually intrusive element of the project. These photographs and simulations were prepared at Key Observation Points (KOPs), which are defined as those locations most sensitive to users of the area in terms of changes or contrasts in visual character, and at which the building would be: (1) the most frequently observed, and/or (2) the most visually prominent. The KOPs established included:

- Viewpoint 1: View of the Proposed Action as seen from the highway turnaround area looking northeast along the ridge.
- Viewpoint 2: View of Alternative 1 as seen from the LVSSR entry gate and parking lot area looking north-northeast along SR 156.

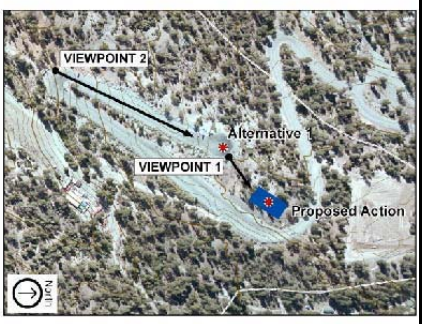
Figures 6 and 7 show Viewpoints 1 and 2 for the Proposed Action and Alternative 1, respectively, and include photographs of “existing conditions” as well as visual simulations of “post-project” conditions.

Figures 6 and 7 do not include visual simulations of the howitzer itself, since it would primarily remain enclosed within the avalanche control building and would not generally be visible to the public. Typically, the howitzer would be visible only to operational personnel during 12 missions per year, which occur in the early morning hours before the ski area is open.

The potential visual effects of avalanche control within the avalanche release zone would be essentially the same for the No Action, Proposed Action, and Alternative 1 options, and hence no visual simulations are required for comparison. That is, for each

Figure 6. Viewpoint 1 (Proposed Action): Existing and Post-Project Conditions

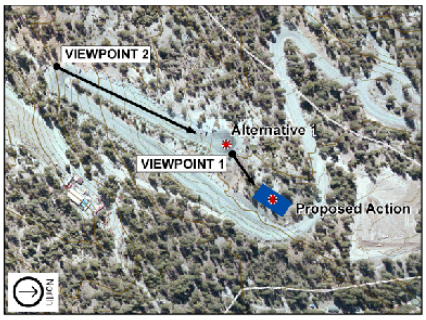
Viewpoint 1: Proposed Action Existing Conditions



Viewpoint 1: Proposed Action Post-project Conditions

Figure 7. Viewpoint 2 (Alternative 1): Existing and Post-Project Conditions

Viewpoint 2: Alternative 1 Existing Conditions



Viewpoint 2: Alternative 1 Post-project Conditions

alternative, avalanche control ordnance would detonate within the snow cover (not directly on the ground) in the same general area, thus creating seasonal, short-term, and temporary disturbances in the snow that would not typically be visible to recreationists from most viewpoints due to distance and/or elevation.

3.6.1 Affected Environment

The LVSSR is a scenic, but developed area. Scenic mountain vistas and a naturalistic, forested quality of the surroundings are important characteristics of the area. At the same time, some manmade features are present, such as the lodge buildings, ski lifts, roads, parking lots, fire stations, picnic areas, and campground facilities. Existing development of this type is present along the roadways, particularly along SR 156, which is the main access road to the ski area.

3.6.2 Environmental Consequences

3.6.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated. No additional effects to visual resources would occur, as current site conditions would not be altered and avalanche control methods used in the past would be employed.

3.6.2.2 Proposed Action

The viewpoint from which the building is expected to be the most visually prominent and most frequently viewed is shown on Figure 6 (i.e., the highway turnaround area). As may be seen from the visual simulation on the figure, the building would be designed to be consistent with:

- Other development and structures in the vicinity and along SR 156;
- The USFS SMNRA General Management Plan objectives for such structures; and
- LVSSR's SUP for the area, as issued by the USFS.

While a visible feature to users of the immediate area, the building is not expected to create a major visual intrusion, a substantial change in scenic quality, or result in a significant or adverse visual impact. The visual simulation represents current conceptual design; however, the building's final color and exterior would be reviewed and approved by a USFS landscape architect prior to construction, to ensure that the potential for visual effects is minimized to the extent feasible.

From other viewpoints in the area, the building is anticipated to be less visible, and thus is not expected to create significant adverse visual effects as described below:

- As viewed from the road and other areas up gradient of the site, the building would primarily be below the horizon due to the topography, and would also be largely screened from view by existing vegetation and trees.
- As viewed from the road and other areas down gradient of the site, the upper portions of the building may be visible in part, but they would also be partially shielded from view by existing vegetation and trees.
- As viewed from the nearby picnic areas or campgrounds in Lee Canyon, the building would not be visible at all.
- The building would be in the range of view of recreationists on the LVSSR ski slopes, but it is not likely that it would represent a significant visual intrusion since it: (1) would blend in with other existing ski resort facilities, and (2) would be difficult to see due to its size, distance from the slopes, and partial screening by trees and vegetation.
- Visual effects due to construction of the building and its associated utilities and access road would be short-term and temporary, and would be mitigated during the clean-up phase of construction.

3.6.2.3 Alternative 1

Under Alternative 1, the avalanche control building would be located at the SR 156 highway turnaround area, as shown on Figures 1 and 2; the building's design, construction, and dimensions and height would be identical to the Proposed Action.

At the Alternative 1 location, the building is expected to be most frequently observed from the LVSSR entry gate and parking lot area. As shown in Figure 7, from this viewpoint the building is not a dominant feature that is expected to detract from the existing view, or result in significant adverse visual effects.

Similar to the Proposed Action, the building is anticipated to be most visually prominent to users of the area in the immediate vicinity of the highway turnaround. As such, the potential for visual effects from these viewpoints would be similar; like the Proposed Action, the building would be designed to be consistent with: (1) other development and structures in the vicinity and on SR 156, (2) the USFS SMNRA General Management Plan objectives, and (3) LVSSR's SUP for the area, and thus it is not expected to create a major visual intrusion, a substantial change in scenic quality, or result in a significant or adverse visual effect. The impressive and serene largely natural vista viewed from the turnaround past the building would not be affected.

As discussed previously, the final building design will be reviewed and approved by a USFS landscape architect prior to construction, to ensure that the potential for visual effects is minimized to the extent feasible.

From other viewpoints in the area, the building is anticipated to be less visible, and is not expected to create a major visual intrusion or change in scenic quality, or to have significant adverse effects as described below:

- The building is not expected to represent a more significant visual intrusion to recreationists on the LVSSR ski slopes than Alternative 1.
- The building would not be visible from the nearby picnic areas or campgrounds in Lee Canyon.
- While construction activities on SR 156 would be more visible than Alternative 1, they would be short-term and temporary, and would be mitigated during the clean-up phase of construction.

In addition to the above considerations, locating the building at the site under the Proposed Action would be consistent with the USFS SMNRA Plan Objectives 11.23 and 11.59, which emphasize the use of currently disturbed areas when expanding recreational facilities.

3.6.3 Mitigation Measures

3.6.3.1 Proposed Action

Since the building site in the Proposed Action is located in a previously undisturbed area with existing trees and vegetation, efforts should be made to minimize tree and vegetation removal during construction. To protect existing trees and vegetation while construction is ongoing, the project conservation elements described in Section 2.2.4 of this document would be implemented, and onsite monitors would be present to ensure compliance.

Following construction, visual effects due to construction activities would be mitigated by area clean-up. Such cleanup activities include, but would not be limited to:

- Removal of stockpiles, equipment, materials, and trash and debris;
- Re-grading of disturbed areas to pre-existing conditions to the extent feasible; and
- Roadway repair as required.

3.6.3.2 Alternative 1

Under Alternative 1, the location of the avalanche control building will be in the previously disturbed and paved highway turnaround area of SR 156; thus, no removal of trees and vegetation would occur. However, the mitigation measures outlined in the Proposed Action would be implemented as applicable to ensure that effects are minimized to the extent feasible.

3.7 Land Use and Recreation

3.7.1 Affected Environment

Land use in the greater area surrounding the proposed project is primarily committed to recreation, with some private residences and county holdings. The USFS manages the SMNRA, a total of 316,000 acres, for public recreation. The area is popular for a variety of seasonal uses; in the summer, hiking, camping, picnicking, horseback riding, and mountain bike riding are the most popular activities.

There are nine USFS maintained hiking trails, four picnic areas, and six campgrounds in the greater Lee and Kyle Canyon areas (accessed via SR 156, SR 157, and SR 158), that include: (1) the Foxtail Group Day-Use Area, (2) Old Mill Picnic Area, (3) Bristlecone Trailhead, (4) Foxtail Camp, (5) McWilliams Campground, (6) Dolomite Campground, (7) Lee Canyon Recreation Homes, and (8) the Clark County Youth Camp. The nearest campgrounds to the project area include the McWilliams and Dolomite campgrounds, and the nearest hiking trail includes the Bristlecone Trail and its associated branches.

In addition to designated campgrounds, camping occurs throughout the area. Popular winter activities in the area include cross country skiing, snowshoeing, snowmobiling, downhill skiing, and snowboarding. Cross-country skiing and snowshoeing are permitted throughout the recreation area, and there is also one designated snowmobile route.

The LVSSR ski resort provides the largest draw for winter recreation in the area. In the winter months, skiing and snowboarding at the resort are the most common recreation activities in the project area. The resort hosts 35,000 to 40,000 visitors each year and daily visitation can be as high as 1,400 during peak periods (SE Group 2003).

3.7.2 Environmental Consequences

3.7.2.1 No Action

Under the No Action alternative, LVSSR would revert to conducting avalanche hazard reduction using hand-thrown charges on avalanche prone areas and using the compressed nitrogen powered launch system to place charges in areas not accessible to hand-charge placement. The equipment would be transported by a snow grooming machine to designated firing locations. No avalanche control building/storage facility and associated supporting infrastructure would be constructed and the howitzer would not be operated. No additional effects to land use additional effects to water quality resources would occur, as current site conditions or land use in the area would not be altered and avalanche control methods used in the past would be employed.

3.7.2.2 Proposed Action

The current land use designation for recreational activities would remain unaffected under the Proposed Action. LVSSR presently operates under an SUP issued by the USFS on September 1, 1999 for the purposes of skiing and snowboarding, and the Proposed Action would be consistent with this SUP and no changes to this permit or land use designation would be required; expiration date of the permit is September 10, 2039.

In addition to no change in designated land use, there would be: (1) no effect on private or county land use, and (2) no long-term effects on residences, picnic or campground uses, or to uses of other recreational facilities in nearby areas. The proposed project would not disrupt or hinder the continuance of these activities; additionally, it would not degrade the recreational experience of users of the area, since impacts to potentially affected resources (as described in previous sections in this EA) are considered to be negligible. The primary effect on land use and recreation due to the implementation of the Proposed Action is expected to be a long-term and beneficial impact associated with the improved safety and recreational experience of users of the LVSSR ski resort and facilities.

Construction activities could potentially create an inconvenience by generating noise, dust, and traffic detours, which may have an effect on hikers in the immediate site vicinity, users of the Bristlecone Trail, campers at the Dolomite and McWilliams campgrounds, picnickers, or summer visitors to the resort. However, such effects would be short-term and temporary, and would cease upon completion of construction.

3.7.2.3 Alternative 1

Alternative 1 is identical to the Proposed Action except for the location of the avalanche control building. As such, potential impacts to land use and recreation would be essentially the same as that alternative, with minor exceptions related to parking and traffic as discussed below:

- Winter parking in the turnaround is not authorized; therefore, use of the highway turnaround area for the avalanche control building would not affect parking. In the summer, there are other areas for parking in the immediate vicinity that could accommodate parking; therefore, this effect is expected to be negligible.
- Increased traffic congestion may occur during construction under Alternative 1, since the building site would be located in the turnaround area adjacent to SR 156. However, as previously discussed, these impacts are expected to be short-term and temporary and are not expected to be significant.

Similar to the Proposed Action, the primary impact of Alternative 1 is expected to be long-term and beneficial, and associated with the increased safety of recreationists who use the LVSSR ski resort and facilities. Additionally, under Alternative 1 the location of the avalanche control building would be on the paved and previously disturbed highway turnaround area. As such, it would be consistent with the USFS SMNRA Plan Objectives 11.23 and 11.59, which emphasize the use of currently disturbed areas when expanding recreational facilities

3.7.3 Mitigation Measures

The primary adverse effects to land use and recreation are expected to be due to the temporary traffic and dust created during construction, which would be mitigated as follows for both the Proposed Action and Alternative 1:

- Flagmen and other standard traffic control BMPs could be used to minimize traffic congestion.
- Dust suppression during construction would be via periodic watering, as necessary.

3.8 Cumulative Impacts

Cumulative effects are those environmental consequences that result from the incremental effects of an action when added to other past, present, and reasonably foreseeable future projects. The cumulative effects of these projects, in combination with the potential effects of the proposed project, were evaluated for each resource included in this EA.

Many projects in the area were deemed to have no affect and/or are not a contributing element to the effects of other area projects; these projects have not been included in this assessment. Likewise, the No Action alternative would not result in contributing or incremental effects, and therefore this alternative is not discussed below.

Projects, uses, and permits in the area of potential affect are summarized below, followed by the cumulative impact assessment for potentially affected resource.

3.8.1 Current Uses and Permits

- Foxtail Group Day-Use Area
- Old Mill Picnic Area
- Bristlecone Trailhead
- Foxtail Camp
- McWilliams Campground
- Dolomite Campground
- Lee Canyon Recreation Homes
- Clark County Youth Camp (Camp Lee Canyon)
- LVSSR Proposed Master Plan

3.8.2 Projects in the Affected Area

3.8.2.1 Past Projects

Lee Canyon Meadow Restoration

This project includes actions to address meadow and water quality degradation that includes repair of gullies, dissipating water energy levels at culverts, provide visitor facilities, and control access to the meadow by wild horses.

LVSSR Lift #1 Repair/Rehabilitation

An avalanche in January 2005 damaged the upper support towers of an existing double chair lift (Lift #1) resulting in its closure. NEPA documentation has been prepared for this project, and construction was completed in 2005.

LVSSR Snowmaking System and Lower Area Parking Improvements

This project includes actions to expand the existing LVSSR snowmaking system and provide additional parking facilities at the ski resort. NEPA documentation has been prepared for this project, which is currently under USFS review.

3.8.2.2 Reasonably Foreseeable Future Projects

LVSSR Master Development Plan

The long range development plan includes the consideration of several projects, including the addition of a new ski lift and the replacement and expansion of the Chalet and Lodge areas. Additional snowmaking water storage and snowmaking lines to provide for existing runs and potential new terrain are also being considered. The site analysis and planning is currently underway. A separate NEPA analysis would be prepared.

3.8.3 Cumulative Impacts

The potential cumulative effects are discussed for each resource in the following sections.

3.8.3.1 Biological Resources

The area of potential affect for this resource includes: (1) the USFS Management Area 11–Developed Canyons, and (2) the Lee Canyon Biodiversity Hotspot. A cumulative effects analysis was performed separately for both the Proposed Action and Alternative as described below:

Proposed Action

To evaluate the accumulation of effects over time within the area of affect, March 2000 was used as a reference point to represent the original baseline conditions. As may be seen in Table 6, total cumulative effects were then assessed by adding effects from the past projects (see Section 3.8.2.1), to effects associated with the proposed project, and comparing them to the baseline conditions. As shown in the table, when combined with past projects, the Proposed Action would have only a negligible contributory effect to both Management Area 11 and the Lee Canyon Biodiversity Hotspot.

There is currently not enough information to conclusively state whether the Proposed Action, in combination with foreseeable future projects, would result in significant cumulative effects to biological resources; this analysis would be performed under a separate NEPA process at the time those projects occur. Under those NEPA processes, the cumulative effects of the Proposed Action in conjunction with these projects would then be analyzed. However, given the negligible contributing effects indicated in Table 6, it is not expected that this alternative would be a determining factor.

Alternative 1

Since no disturbance to previously undisturbed areas would occur as a result of Alternative 1, there would be no cumulative contribution to either past or foreseeable.

future project effects; hence, there would be no cumulative contribution associated with this alternative.

3.8.3.2 Cultural Resources

Given that no cultural resources were found in the project area, there would be no cumulative contribution to losses and no cumulative effects under either the Proposed Action or Alternative 1.

3.8.3.3 Water Quality

The area of affect for this resource would be the overall watershed of the entire Upper Lee Canyon area, located within the USFS Management Area 11–Developed Canyons. Under both the Proposed Action and Alternative 1, potential water quality effects are related to erosion and sedimentation due to construction. Such water quality effects would be short-term and temporary and are considered to be negligible; additionally, any effects that may occur can be mitigated through the use of BMPs and good engineering practice as outlined in Section 2.2.4.

Table 6: Cumulative Impact of Biological Resources–Proposed Action

Affected Area	March 2000 Baseline (acres)	Past Losses (acres)	Currently Existing Area (acres)	Permanent Project Losses (acres)	Temporary Project Losses (acres)	Total Cumulative (Past + Permanent + Temporary)	Remaining Area (acres)
Developed Canyon Management Area 11	72,151	21.10	72,129.90 (99.97%)	0.102	1.445	22.65	72,128.35 (99.97%)
Lee Canyon Biodiversity Hotspot	2997.3	21.10	2976.20 (99.30%)	0.102	1.445	22.65	2974.65 (99.24%)

Thus, the proposed project is not considered to have a substantial cumulative contribution to water quality effects, and would not result in significant cumulative effects.

3.8.3.4 Noise

The area of potential affect for noise would encompass USFS Management Area 11, and include the residences, picnic areas, campgrounds, and other recreational facilities near the LVSSR ski resort in Upper Lee Canyon. The nearest sensitive receptors most likely to be affected by project-generated noise would be the year-round occupants of the Lady of Snow and Pinyon Cabin residences.

Under both the Proposed Action and Alternative 1, project activities are not expected to result in a significant increase in incremental noise, and potential effects to sensitive receptors are considered negligible. Thus, when combined with the past projects described in Section 3.8.2.1, the proposed project is not expected to have a contributing or cumulative effect.

There is currently not enough information to conclusively state whether the Proposed Action or Alternative 1, in combination with foreseeable future projects, would result in significant cumulative noise effects. Both the type and amount of noise may vary for different projects, as well as the sensitive receptors potentially affected. Thus, while noise from one project may affect certain sensitive receptors, noise from another project may not, and the combined effects may not be cumulative or result in incremental increases.

Additional analyses that would take into account the project-specific nature of noise effects would be performed under a separate NEPA process for future projects. This analysis would be performed at the time those projects occur. Under those NEPA processes, the cumulative effects of the Proposed Action or Alternative 1 in conjunction with these projects would then be analyzed. However, given the negligible contributing effects discussed above, it is not expected that the proposed project would be a determining factor when evaluating cumulative effects.

3.8.3.5 Visual Resources

The area of affect for visual resources would encompass USFS Management Area 11–Developed Canyons, and primarily include the LVSSR ski resort and other recreational facilities located near LVSSR in Upper Lee Canyon.

Potential visual affects due to the proposed project would be associated with the avalanche control building. The building would be designed and constructed using an approved USFS pallet of materials and colors to be complimentary to the look and feel of the surrounding forest, and its exterior would be reviewed and approved by a USFS landscape architect prior to construction. Under both the Proposed Action and Alternative 1, the building would remain at least partially screened from most viewpoints in the area, and thus is not expected to result in a significant potential for adverse visual effects.

Visual simulations prepared for both the Proposed Action and Alternative 1, at Key Observation Points where the building would be the most frequently observed and most prominent, indicate that the building would be consistent with: (1) other development

and structures in the vicinity and on SR 156, (2) the USFS SMNRA General Management Plan objectives, and (3) LVSSR's SUP for the area.

Given the above, the avalanche control building at both the Proposed Action and Alternative 1 locations:

- Is not expected to create a major visual intrusion, a substantial change in scenic quality, or result in a significant or adverse visual impact,
- Would be consistent with both past and foreseeable future projects in the area of potential affect, and
- Is expected to have an immaterial contributing effect to visual resources in the area, and hence result in no cumulative effects.

3.8.3.6 Land Use and Recreation

The area of effect for this resource would include USFS Management Area 11–Developed Canyons, and the area currently permitted by the LVSSR SUP located within Management Area 11. The proposed project (both the Proposed Action and Alternative 1) would be consistent with the land use objectives for USFS Management Area 11, and would result in no change to the designated land use under the LVSSR SUP. As such, the proposed project is expected to be consistent with both past and foreseeable future projects.

The primary effect on land use and recreation due to the implementation of proposed project is expected to be a long-term and beneficial impact on the major recreational activities in the area.

Given the above, the proposed project is not expected to result in an adverse cumulative contribution to other projects in the area of potential affect, and no cumulative effects are anticipated.