

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental effects, or impacts, of the construction and operation of the access road(s) and utility corridors for the alternatives. The regulations of the CEQ require that an EIS contain a description of the environmental effects (both positive and negative) of the proposed alternatives. CEQ's regulations (40 CFR 1508.8) distinguish between direct and indirect effects. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are reasonably foreseeable effects caused by the action that occur later in time or farther in distance. Both direct and indirect effects are addressed in this chapter.

CEQ's regulations also require that an EIS contain a description of the cumulative impacts (40 CFR 1508.7) of the proposed alternatives. CEQ's regulations defined cumulative impacts as those that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes other such actions. Cumulative impacts are addressed in Section 4.19. Impacts associated with the development of the private property are addressed in further detail in Appendix A. Section 4.20 addresses the potential impacts of the alternatives on the Key issues identified in Chapter 1.

4.1 SURFACE WATER

The environmental consequences to surface water resources from the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.1-1. Note that this is a partial list of standards reflecting only applicable surface water considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations.

Implementation of the USFS standards and guidelines criteria, and other state and Federal criteria, are key to mitigating the effects of the alternatives on surface water resources. These criterion are discussed in the following sections.

4.1.1 Alternative 1 – No Action Alternative

4.1.1.1 *Construction Direct and Indirect Effects (Short Term)*

Under the No Action Alternative, the road into the private property, FSR 391, would remain in its current configuration and would be utilized as currently managed for access into and out of the private property. Road improvements, upgrades, and winter access would not be allowed. Because there would be no construction, no impacts on the watershed, stream health, floodplain, wetlands, and surface water quality would occur.

Table 4.1-1. Applicable Standards for Federal Action

Parameter	Standard
Hydrologic Function	Manage land treatments to conserve site moisture and protect long-term stream health from damage by increased runoff.
	Manage land treatments to maintain enough organic ground cover in each land unit to prevent harmful increased runoff.
Riparian Areas	In the water influence zone (WIZ) next to perennial and intermittent streams, lakes, and wetlands, allow only those land treatments that maintain or improve long-term stream health.
	Design and construct all stream crossings and other instream structures to pass normal flows, withstand expected flood flows, and allow free movement of resident aquatic life.
	Conduct actions so that stream pattern, geometry, and habitats are maintained or improved toward robust stream health.
	Do not degrade ground cover, soil structure, water budgets, or flow patterns in wetlands.
	Maintain enough water in perennial streams to sustain existing stream health. Return some water to dewatered perennial streams when needed and feasible.
Sediment Control	Manage water-use facilities to prevent gully erosion of slopes and to prevent sediment and bank damage to streams.
	Limit roads and other disturbed sites to the minimum feasible number, width, and total length consistent with the purpose of specific operations, local topography, and climate.
	Construct roads and other disturbed sites to minimize sediment discharge into streams, lakes, and wetlands.
	Stabilize and maintain roads and other disturbed sites during and after construction, to control erosion.
Water Purity	Reclaim roads and other disturbed sites when use ends, as needed, to prevent resource damage.
	Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or ground water.
	Apply runoff controls to disconnect new pollutant sources from surface and ground water.
	Apply chemicals using methods which minimize risk of entry to surface and ground water.

Source: USFS 1996a

4.1.1.2 Operation Direct and Indirect Effects (Long Term)

FSR 391 would continue to serve as access to the private property as well as to provide public access through the private property to Alberta Lake. Managed use would remain per existing conditions, including occasional grading typical of gravel roads, as well as dust control. Operations under the No Action Alternative would continue to impact the watershed, stream health, floodplain, wetlands, and surface water quality as described in Section 3.1.

4.1.2 Alternative 2 – Proposed Action

4.1.2.1 Construction Direct and Indirect Effects (Short Term)

Access Road and Adjacent Utility Corridor

Road and adjacent utility corridor construction would disturb approximately 1.42 acres by extending Tranquility Road, which is currently under construction. This road extends over a steep cross-slope but would have a relatively minor effect since there are no stream crossings. In addition, FSR 391 is immediately upslope, intercepting runoff from the upper reaches of the basin, isolating this short section of road. Thus, use of USFS standard practices, and practices consistent with the state requirements for NPDES stormwater permits, including BMPs, would

be adequate to insure that the short-term construction and indirect effects would be relatively minor on surface water resources.

Utility Corridor #3

This corridor would disturb approximately 0.23 acre. The utility corridor is located on a 6 to 10 percent slope and would be subject to erosion should a rain or snowmelt event occur during construction. The utility corridor would require BMPs, specifically sized and designed for construction on steep slopes. In addition, construction maintenance and monitoring would minimize the short-term effects of the proposed utility corridor. BMPs would include a revegetation plan that would restabilize the utility corridor. Use of USFS standard practices, and practices consistent with the state requirements for NPDES stormwater permits, including BMPs, would be adequate to insure that the short-term construction and indirect effects on surface water resources would be minimal.

4.1.2.2 *Operation Direct and Indirect Effects (Long Term)*

Maintenance and operation of the access road would have minimal effects on the surface water resources of the watershed which can be adequately addressed by the USFS standards and guidelines as described below. Note that the utility corridor, once stabilized and revegetated, would not have any long-term effects. The exception is utility maintenance, which if required, would have the same short-term effects as those presented above. Thus, the following discussion is limited to the access road.

Hydrologic Function

The construction of the road surface would slightly decrease organic ground cover and increase the impervious cover within the watershed, resulting in a small increase in runoff. However, this would have a negligible effect on the overall hydrology of the watershed. The road alignment, being perpendicular to the fall line, would intercept runoff and cause a small rerouting of surface runoff. However, these effects would be minimal due the hydrologic isolation caused by FSR 391.

Riparian Areas

Stream Health

The stream channel morphology, alignment, and planform of both unnamed tributaries to Pass Creek would have minimal effects from this alternative.

Floodplain

Use of the access road would have a minimal effect on the floodplains associated with either unnamed tributaries to Pass Creek.

Wetlands

Use of the access road would have no effect on the existing wetlands.

Sediment Control

Surface Water Quality

Use of the access road would result in increased contaminants directly from vehicles. Petroleum products from vehicles such as oil, gas, and hydraulic fluids are possible, as well as some metals typical of vehicular use. Because the road surface would be asphalt, maintenance issues associated with gravel roads (blading and dust control) would not be required.

Snow Removal and Snow Storage

Use of the access road would also result in snow plowing, snow removal, and snow storage which would affect the surface water quality, including the introduction of sand and deicers during winter operations. Major components of the snow storage plan are noted as follows:

1. Plowing would be done when snow accumulations are 4 inches or greater.
2. Products would be used for deicing; the current proposal uses ‘Storm Team Plus #387’.
3. Snow removal would be coordinated by the Applicant and the Ski Area.
4. Snow storage sites would be located within the private property, but none are proposed on the NFS lands.

It is anticipated that snow plowing would result in snow being pushed to both sides of the proposed access road, and stacked in widths of approximately 10 to 12 feet. USFS standards and guidelines are adequate for design and routing of flows associated with snowmelt. However, deicers may be present in the snow and should be considered when locating the road relative to sensitive vegetation areas. Filter strips as described in the USFS standards and guidelines would be incorporated into water quality mitigation measures to reduce the effects from deicers.

4.1.3 Alternative 3 – Snow Shed - East Village Alternative

4.1.3.1 Construction Direct and Indirect Effects (Short Term)

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 2.75 acres. The topography between Highway 160 and the private property slopes steeply from north to south, varying from approximately 10 to 30 percent. This would require the road access to be constructed using one switch-back and two crossings over a stream, which is a tributary to the north unnamed tributary of Pass Creek. This stream is not shown on any existing mapping, however, based on field observations, flows appear to be perennial and support a riparian corridor along the channel bank. Culvert or bridge crossings would be designed in accordance

with USFS standards and guidelines. Prior to development of design plans of either the road or utility corridor, wetlands delineation would be performed to insure avoidance and/or minimization of wetlands from the location and design of the access road. Per the USFS standards and guidelines, creek crossings and/or wetlands would require a Section 404 permit for utility and road crossings from the USACE for fill in the waters of the United States. The USFS would be responsible for Section 404 compliance.

Due to the location of the proposed road access on steep slopes, it is imperative that the construction procedures include BMPs, specifically sized and designed for construction on steep slopes. Maintenance and monitoring would minimize the short-term effects of the proposed access road.

Use of USFS standard practices, and practices consistent with the state requirements for NPDES permits, including BMPs, would be adequate to insure that the short-term construction and indirect effects would minimal on surface water resources.

Utility Corridor #3

This corridor would disturb approximately 0.23 acre. The utility corridor is located on a 6 to 10 percent slope and would be subject to erosion should a rain or snowmelt event occur during construction. The utility corridor would require BMPs, specifically sized and designed for construction on steep slopes. In addition, construction maintenance and monitoring would minimize the short-term effects of the proposed utility corridor. BMPs would include a revegetation plan that would restabilize the utility corridor. Use of USFS standard practices, and practices consistent with the state requirements for NPDES stormwater permits, including BMPs, would be adequate to insure that the short-term construction and indirect effects on surface water resources would be minimal.

4.1.3.2 *Operation Direct and Indirect Effects (Long Term)*

Hydrologic Function

The construction of the road surface would decrease organic ground cover and increase the impervious cover within the watershed, resulting in an increase in runoff. However, it is anticipated that the increase would be minimal relative to the overall hydrology of the watershed. The road alignment, with the proposed switch back, would intercept and cross the stream tributary to the north tributary to Pass Creek in two locations.

Riparian Areas

Stream Health

The stream channel morphology, alignment, and planform of the north unnamed tributaries to Pass Creek would be affected due to the two proposed crossings. The road and crossing would also reroute surface runoff to culvert points concentrating flows to the crossings. The USFS standards and guidelines provide requirements and guidance for the implementation of the creek/road crossings, including stormwater drainage design, debris passage, and limits of tree clearing. The USFS standards and guidelines also require that a maximum of 80 percent of the

stream banks be maintained at “reference conditions”. Permit requirements from the state and USACE are also requirements of the USFS standards and guidelines.

Floodplain

Floodplain requirements of the National Flood Insurance Program would be incorporated into the design of the creek crossing as outlined in the USFS standards and guidelines.

Wetlands

Based on USFS standards and guidelines, wetlands must be identified and avoided in the design and construction of the proposed access road. All Federal requirements must be adhered to, including the issuance of a Section 404 permit for wetland effects and for fill in the waters of the United States.

Sediment Control

Surface Water Quality

Use of the access road would result in increased contaminants directly from vehicles. Petroleum products such as oil, gas, and hydraulic fluids can result from vehicles; some metals typical of vehicular use may also yield contaminants.

Snow Removal and Snow Storage

Use of the access road would also result in maintenance operations for snow plowing, removal, and snow storage that would affect the surface water quality, including the introduction of sand and deicers during winter operations. Major components of the snow storage plan are noted as follows:

1. Plowing would be done when snow accumulations are 4 inches or greater.
2. Products would be used for deicing; the current proposal is ‘Storm Team Plus #387’.
3. Snow removal would be conducted by the Applicant.
4. Snow storage sites would be located within the private property, but none are proposed on the NFS lands.

It is anticipated that snow plowing would result in snow being pushed to either side of the proposed road access to widths of 10 to 12 feet on flat side slopes, and greater on steeper slopes. Use, maintenance, and operations of the new access road would have minor effects on the surface water resources of the watershed with proper implementation of USFS standards and guidelines.

4.1.4 Alternative 4 – Dual Road Access Alternative

4.1.4.1 Construction Direct and Indirect Effects (Short Term)

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 2.79 acres. One component of the USFS standards and guidelines for sediment control is to limit roads and other disturbed sites to the lowest practical number, width, and total length consistent with the purpose of specific operations, local topography, and climate.

Snow Shed Access: Due to the location of the proposed road access on steep slopes (10 to 30 percent), it is imperative that the construction procedures include BMPs, specifically sized and designed for construction on steep slopes. Maintenance and monitoring would minimize the short-term effects of the proposed access road.

Tranquility Road Access: Road construction would disturb a distance of 250 feet in an area that is under reconstruction. Thus, use of normal USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects would be minimal on surface water resources.

Utility Corridor #3

This corridor would disturb approximately 0.23 acre. The utility corridor is on an extremely steep slope and would require BMPs, specifically sized and designed for construction on steep slopes. As with the road construction, maintenance and monitoring would be the keys to success for minimizing the short-term effects of the proposed utility corridor. BMPs would include a revegetation plan that would restabilize the utility corridor. Use of USFS standard practices, and practices consistent with the state requirements for NPDES permits, including BMPs, would be adequate to insure that the short-term construction and indirect effects would be minimal on surface water resources.

4.1.4.2 Operation Direct and Indirect Effects (Long Term)

Hydrologic Function

The construction of the road surfaces would decrease organic ground cover and increase the impervious cover within the watershed, resulting in an increase in runoff. It is anticipated however, that the increase would be minimal relative to the overall hydrology of the watershed. The Snow Shed road alignment for Alternative 4 does not include the proposed switch back.

Riparian Areas

Stream Health

The stream channel morphology, alignment, and planform of the north unnamed tributaries to Pass Creek would be affected due to the proposed crossing. The road and crossing would also reroute surface runoff to culvert points, concentrating flows at the crossings. The USFS

standards and guidelines provide requirements and guidance for the implementation of the creek/road crossings, including stormwater drainage design, debris passage, and limits of tree clearing. The USFS standards and guidelines also require that a maximum of 80 percent of the stream banks be maintained at “reference conditions”. Permit requirements from the state and USACE are also requirements of the USFS standards and guidelines.

Floodplain

Floodplain requirements of the National Flood Insurance Program should be incorporated into the design of the creek crossing at the north tributary to Pass Creek.

Wetlands

Based on USFS standards and guidelines, wetlands must be identified and avoided in the design and construction of the proposed access road. All Federal requirements must be adhered to including the issuance of Section 404 permits for wetland effects and for fill in the waters of the U.S.

Sediment Control

Surface Water Quality

Use of the access road would result in increased contaminants directly from vehicles. Petroleum products such as oil, gas, and hydraulic fluids can result from vehicles; some metals typical of vehicular use may also yield contaminants.

Snow Removal and Snow Storage

Use of the access road would also result in maintenance operations for snow plowing, removal, and snow storage that would affect the surface water quality, including the introduction of sand and deicers during winter operations. Major components of the snow storage plan are noted as follows:

1. Plowing would be done when snow accumulations are 4 inches or greater.
2. Products would be used for deicing; the current proposal is ‘Storm Team Plus #387’.
3. Snow removal will be coordinated by the Applicant and the Ski Area.
4. Snow storage sites would be located within the Village property but none are proposed on the USFS lands.

It is anticipated that snow plowing would result in snow being pushed to either side of the proposed road access to widths of 10 to 12 feet on flat side slopes, and greater on steeper slopes.

Maintenance and operation of the access road would have minimal effects on the surface water resources of the watershed.

4.2 GROUNDWATER

The environmental consequences (impacts and mitigation) to groundwater resources for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.2-1. Note that this is a partial list of standards reflecting only applicable groundwater considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal regulations. Affects on groundwater as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

The construction and operation of the roads pose a minor risk to groundwater quality. Potential contaminants fall into two general categories, organic and inorganic. Organic contaminants may include gasoline, diesel fuel, and motor oil. Inorganic contaminants may include road salt, composed largely of either sodium chloride or magnesium chloride. The organic contaminants are less dense than water and do not readily enter the groundwater regime under a “road side” spill scenario, but rather runoff over the land contaminating the first few feet of soil and surface water. The soils are cleaned up by excavation and disposal. Surface water is cleaned up by skimming the contaminant from the water surface and/or relying on dilution. The inorganic compounds have very low toxicity in the groundwater regime, and hence do not pose a significant risk to groundwater resources.

Table 4.2-1. Applicable Standards for Federal Action

Parameter	Standard
Water Purity	Place new sources of chemical and pathogenic pollutants where such pollutants will not reach surface or groundwater. Apply runoff controls to disconnect new pollutant sources from surface and groundwater. Apply chemicals using methods which minimize risk of entry to surface and groundwater.

Source: USFS 1996a.

4.2.1 Alternative 1 – No Action Alternative

4.2.1.1 Construction Direct and Indirect Effects (Short Term)

Under the No Action Alternative, existing conditions would continue. FSR 391 would remain in its current configuration and serve as access in to and out of the private property. Road improvements, upgrades, and winter access would not be allowed. Because there would be no construction, no additional impacts to the groundwater or groundwater quality would occur. Consequently, no short-term impacts are anticipated.

4.2.1.2 *Operation Direct and Indirect Effects (Long Term)*

FSR 391 would continue to serve as access to the private property, as well as provide public access through the private property to Alberta Lake. Managed use of the road would remain per existing conditions, including grading of gravel roads as well as dust control. Because there would be no changes in operations, no additional impacts to the groundwater or groundwater quality would occur. Consequently, no additional long-term impacts are anticipated beyond those described in Section 3.2, Groundwater.

4.2.2 *Alternative 2 – Proposed Action*

4.2.2.1 *Construction Direct and Indirect Effects (Short Term)*

Road and utility corridor construction would disturb approximately 1.65 acres extending Tranquility Road and constructing two utility corridors and a third stand-alone utility corridor. Groundwater levels along the requested easements would likely vary seasonally; the magnitude of this variation would be considered in the techniques employed in the construction of an all-weather access road and in the construction activities within the utility corridors. Construction activity impacts would be seasonal and of short duration, and would be minimized through the use of BMPs. Erosion during road and utility corridor construction can lead to deposition of sediment in downstream areas. Silt fences, straw bales, and slash filter windrows would be used during construction. Revegetation of the disturbed areas adjacent to roads and in the utility corridors could be complicated by the low pH of these soils and local climate. Depending on the depth of the road cuts and excavations for utilities, the water table may or may not be encountered. However, it is likely that if groundwater were encountered under this alternative, adverse impacts could likely be mitigated with the use of drains to maintain historic groundwater flow paths. A detailed reconnaissance of the road and utility corridors would be performed prior to construction to evaluate springs or seeps that may be encountered during construction.

4.2.2.2 *Operation Direct and Indirect Effects (Long Term)*

Because the hydrologic cycle in this area is heavily dependent on snow melt and rainfall, and the total area of roads or ditches is relatively small, the operation and maintenance of an all-weather access road and maintenance along the utility corridors would have minimal effects on groundwater supplies. Engineering applications designed to reduce runoff and increase infiltration would also minimize effects. Long-term maintenance operations for the access road and utility corridors would be limited to the easement areas and would be of limited duration, creating little or no additional impacts to groundwater resources.

4.2.3 Alternative 3 – Snow Shed - East Village Access Alternative

4.2.3.1 Construction Direct and Indirect Effects (Short Term)

Under Alternative 3, road and utility corridor construction would disturb approximately 2.98 acres of land. The impacts and mitigation measures for Alternative 3 are similar to those for Alternative 2. The construction would not impact groundwater supplies to wells. However, shallow groundwater would likely be encountered in the lower 100 to 200 feet of the road alignment in the areas of the Cryohemists-Cryaquolls soils. The road has the potential to alter the historic flow path of this groundwater and impact soil resources. Site-specific studies of the groundwater regime along the lower 100 to 200 feet of road would be conducted prior to constructing this road alignment. As in the case of Alternative 2, hydrologic reconnaissance of the road and utility corridors would also be performed prior to construction.

4.2.3.2 Operation Direct and Indirect Effects (Long Term)

The impacts and mitigation measures for Alternative 3 are similar to those for Alternative 2. The operation and maintenance of an all-weather access road and maintenance along the utility corridors would have no effects on groundwater supplies. However, shallow groundwater may be impacted and result in impacts to soil resources. These impacts would likely be limited to the areas of Cryohemists-Cryaquolls soils (lower 100 to 200 feet of road). Historic flow paths of groundwater would have to be maintained to prevent impacts to soil resources. This would require maintenance of an under-drain system. Since the hydrologic cycle in this area is heavily dependent on snow melt and rainfall, water flowing along the road or in ditches alongside the road is most likely to increase the surface water discharge channels instead of becoming part of the shallow groundwater flow. In order to minimize these effects on shallow groundwater, the access road would be constructed in accordance with NFS road construction criteria for a year-round road, thereby minimizing the effects of surface-water runoff. Engineering applications designed to reduce runoff and increase infiltration would also minimize effects.

4.2.4 Alternative 4 – Dual Access Road Alternative

4.2.4.1 Construction Direct and Indirect Effects (Short Term)

The short-term impacts for this alternative are similar to those described in Alternatives 2 and 3, except that the Snow Shed Road alignment avoids the Cryohemists-Cryaquolls soils. Road and utility corridor construction would disturb approximately 3.02 acres extending Tranquility Road and constructing two utility corridors, the Snow Shed Access Road and two utility corridors (conservative assumption), and a third stand-alone utility corridor. Groundwater levels along the requested easements would likely vary seasonally. The magnitude of this variation would be considered in the techniques employed in the construction of an all-weather access road, and in the construction activities within the utility corridors. Construction activity impacts would be

seasonal and of short duration and would be minimized through the use of BMPs. Erosion during road and utility corridor construction can lead to deposition of sediment in downstream areas. Use of silt fences, straw bales, and slash filter windrows, would be used during construction. Revegetation of the disturbed areas adjacent to roads and in the utility corridors could be complicated by the low pH of these soils and local climate. Depending on the depth of the road cuts and excavations for utilities, the water table may or may not be encountered. However, it is likely that if groundwater were encountered under this alternative, adverse impacts could likely be mitigated with the use of drains to maintain historic groundwater flow paths. A detailed reconnaissance of the road and utility corridors would be performed to evaluate springs or seeps that may be encountered during construction.

4.2.4.2 *Operation Direct and Indirect Effects (Long Term)*

The long-term impacts of this alternative are a combination of the affects of Alternatives 2 and 3, except the Snow Shed Road alignment avoids the Cryohemists-Cryaquolls soils. The operation and maintenance of an all-weather access road and maintenance along the utility corridors would have minimal effects on groundwater supplies. However, shallow groundwater may be impacted and result in impacts to soil resources. Historic flow paths of groundwater would have to be maintained to prevent impacts to soil resources. The use of an under-drain system would mitigate potential impacts to soil resources. Engineering applications designed to reduce runoff and increase infiltration would also minimize effects. Long-term maintenance operations for the access road and utility corridors would be limited to the easement areas and would be of limited duration creating little or no additional impacts to groundwater resources.

4.3 WATER RIGHTS AND USE

The environmental consequences (impacts and mitigation) to water rights and use for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Affects on water rights as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

4.3.1 Alternative 1 – No Action Alternative

4.3.1.1 *Construction Direct and Indirect Effects (Short Term)*

The No Action Alternative to utilize FSR 391 under current management criteria would not require construction. As a result, no supply of water would be required, and therefore there would be no additional effect to water rights, their use, or the environment.

4.3.1.2 *Operation Direct and Indirect Effects (Long Term)*

The No Action Alternative would not require additional water supplies; therefore, there would be no additional effect on water rights, their use, or the environment. Consequently, no additional long-term impacts are anticipated beyond those described in Section 3.3, Water Rights and Use.

4.3.2 Alternative 2 – Proposed Action

4.3.2.1 *Construction Direct and Indirect Effects (Short Term)*

Tranquility Road and the three utility corridors could potentially affect the water rights and stream flows of the tributaries of the Rio Grande during construction. The construction would disturb approximately 1.65 acres. Water that may be needed for soil compaction or dust control during road and utility construction could potentially be obtained from the local streams. This effect is expected to be minimal. As these depletions would be the result of new, undecreed uses, a temporary substitute water supply would need to be obtained from the State of Colorado. The Applicant would be able to obtain such approval without undue difficulty due to ownership of an adequate supply of fully consumable replacement water available from the Pine River Weminuche Pass Ditch (PRWPD) that could be provided to replace the new depletions. Following construction, there would be no effect on water rights or stream flows as a result of the proposed action.

4.3.2.2 *Operation Direct and Indirect Effects (Long Term)*

The operation of Tranquility Road and the three utility corridors would not affect the water rights and stream flows of the tributaries of the Rio Grande.

4.3.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

4.3.3.1 *Construction Direct and Indirect Effects (Short Term)*

Alternative 3 would result in minimal impact to water rights and use. Road and utility corridor construction would disturb approximately 2.98 acres. Water rights could potentially be affected if taken from local streams for soil compaction or dust suppression purposes. As these depletions would be the result of new, undecreed uses, a temporary substitute water supply would have to be obtained from the State of Colorado. The Applicant would be able to obtain such approval without undue difficulty due to ownership of an adequate supply of fully consumable replacement water available from the PRWPD that could be provided to replace the new depletions. Following construction, there would be no effect on water rights or stream flows.

4.3.3.2 *Operation Direct and Indirect Effects (Long Term)*

The access road and three utility corridors would not affect the water rights and stream flows of the tributaries of the Rio Grande during operation.

4.3.4 *Alternative 4 – Dual Road Access Alternative*

4.3.4.1 *Construction Direct and Indirect Effects (Short Term)*

This alternative would potentially utilize water obtained from streams for soil compaction and dust suppression purposes. Approximately 3.02 acres would be disturbed during construction. Most water would be used during road and utility construction, although that amount, in the context of the local supply, would be minimal. As these depletions would be the result of new, undecreed uses, a temporary substitute water supply will have to be obtained from the State of Colorado. The Applicant would be able to obtain such approval without undue difficulty due to ownership of an adequate supply of fully consumable replacement water available from the PRWPD that could be provided to replace the new depletions. Following construction, there would be no affect on water rights or use.

4.3.4.2 *Operation Direct and Indirect Effects (Long Term)*

The proposed access road and utility corridors would not affect the water rights and use of the tributaries of the Rio Grande during operation.

4.4 VEGETATION COMMUNITIES

4.4.1 Analyses Common To All Alternatives

4.4.1.1 *Consistency Review*

A consistency analysis, comparing Alternatives 1-4 with the Forest Plan (USFS 1996a, 2003b), has been completed and is contained in the project file. Alternatives 1-4 would be consistent with all Forest Plan standards and guidelines applicable to the vegetation resources addressed herein on NFS lands. Therefore, the RGNF Forest Plan consistency analysis is dropped from further consideration herein.

4.4.2 Alternative 1 – No Action Alternative

Under the No Action Alternative, the USFS would not issue the Applicant/landowner any special use authorization for access across RGNF lands to the private property. However, this action would not preclude the Applicant/landowner from continuing to have at least limited access to the private property.

Under this Alternative, use of FSR 391 would be subject to the limitations outlined in Chapter 2, Proposed Action and Alternatives. No construction or reconstruction of roads, or snow removal, would be authorized, and the Applicant/landowner would be responsible for any maintenance needs required by any use of the road. Also, no application for utility corridors would occur as part of the No Action Alternative.

4.4.2.1 *Construction Direct and Indirect Effects (Short Term)*

Under the No Action Alternative, there would be no new authorized physical impacts to NFS lands (Table 4.4-1). No habitats on NFS lands would be directly affected. Adverse Village at Wolf Creek construction traffic effects along FSR 391 could result from unintended discharges/runoff (e.g., from roads and other impermeable surfaces, snow storage/plowing, chemical spills, etc.), and from the introduction and spread of weeds. Effects to vegetation would generally be confined to the road ROW, unless spills entered waterways, and unless weed infestations went untreated. Toxic runoff/spills into waterways would likely be diluted a short distance downstream with limited effect to riparian and aquatic vegetation. Untreated weed infestations could have localized effects on species composition of native plant communities. FSR 391 maintenance frequency would be increased, but if implemented by the RGNF, should have minimal effects on local vegetation communities.

4.4.2.2 *Operation Direct and Indirect Effects (Long Term)*

Under Alternative 1, long-term direct and indirect operational affects to NFS lands adjacent to existing FSR 391 would be similar to those described above under construction effects. At full Village at Wolf Creek buildout, a larger number of presumably cleaner (with respect to pollutant discharge and weeds) vehicles (i.e., associated with up to approximately 6,147 residents and guests at one time, plus additional caretakers, support, maintenance, infrastructure, commercial personnel, and service personnel, generating the need for approximately 4,542 parking spaces on

the private parcel) would mostly replace a smaller number of dirtier construction vehicles. BMP (not part of the alternative) would likely be implemented on the private parcels and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands. It is assumed that some contaminants associated with snow plowing would enter local tributaries because snow removal, if proposed, would not be 100 percent effective. This is primarily an aquatic animal issue.

Table 4.4-1. Acreage, Type, and Habitat Structural Stage to be Directly Affected on NFS lands by Alternatives 1-4 at Wolf Creek Village.

Habitat Structural Stage ^a	Acreage			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Spruce-fir (4C)	0	0.7	0 ^c	0.7
Spruce-fir (4B)	0	0.23	2.58	1.6
Existing Clearcut	0	0.51	0	0.51
Unvegetated. Fill slope/ Snow storage	0	0.21	0.4	0.21
Total	0	1.65	2.98	3.02

^a See Table 3.4-1.

Source: Western Ecosystems 2004.

Listed, Proposed, and Sensitive Plants

No federally threatened, endangered, proposed, or Region 2 sensitive plants species would be affected by direct, indirect, or cumulative effects associated with Alternative 1 because they do not occur in the habitats present on the project area. Cumulative effects of private Village at Wolf Creek development are presented in Section A.2.4. Table 4.4-2 summarizes direct, indirect, and cumulative effect determinations of Alternatives 1-4 on Region 2 sensitive plants species.

4.4.3 Alternative 2 – Proposed Action

4.4.3.1 Construction Direct and Indirect Effects (Short Term)

Under Alternative 2, the Proposed Action, the 250-foot extension of the existing (i.e., under development) Tranquility Road and two adjacent Utility Corridors would affect 0.51 acre of a 1960s-70s era clearcut. The access road corridor would follow 2,100 feet of the Ski Area’s present access road and its Tranquility Road and parking lots presently under construction. The 23-foot wide Tranquility Road would not be widened. Utility Corridors 1 and 2 would be developed along and adjacent to the northern flank of the existing and extended Tranquility Road. In addition to their location within the clearcut, described above, these utility corridors would be developed through 0.7 acre of the southern edge of an 11.3-acre, late-successional, closed canopy (HSS 4C; see Table 3.4-1) spruce-fir polygon, and through 0.21 acre of recently disturbed, non-vegetated, access road fill slope/snow storage area adjacent to the existing Ski Area entrance road. The proposed Utility Corridor 3, off Highway 160 to the private parcel’s northwest corner, would bisect 0.23 acre of an eastern portion of the 35-acre, mature, closed canopy (HSS 4B) spruce stand (incorrectly identified as a 3B stand in Figure 3.4-1). The 11.3 and 35 acre spruce stands compose 46 acres of HSS 4B located between the Highway and the Ski Area’s parking lots.

Table 4.4-2. Determination Summary of Village at Wolf Creek Alternative Effects on R2 Sensitive Plant Species Potentially Present on the RGNF.

Scientific name	Alternative			
	1	2	3	4
<i>Aquilegia chrysantha</i> var. <i>rydbergii</i>	NI	NI	NI	NI
<i>Astragalus missouriensis</i> var. <i>humistratus</i>	NI	NI	NI	NI
<i>Astragalus proximus</i>	NI	NI	NI	NI
<i>Astragalus ripleyi</i>	NI	NI	NI	NI
<i>Calochortus flexuosus</i>	NI	NI	NI	NI
<i>Carex diandra</i>	NI	NI	NI	NI
<i>Carex leptalea</i>	NI	NI	NI	NI
<i>Cypripedium parviflorum</i>	NI	NI	NI	NI
<i>Draba grayana</i>	NI	NI	NI	NI
<i>Draba smithii</i>	NI	NI	NI	NI
<i>Eriogonum brandegei</i>	NI	NI	NI	NI
<i>Eriophorum altaicum</i> var. <i>neogaeum</i>	NI	NI	NI	NI
<i>Eriophorum chamissonis</i>	NI	NI	NI	NI
<i>Eriophorum gracile</i>	NI	NI	NI	NI
<i>Gilia sedifolia</i>	NI	NI	NI	NI
<i>Machaeranthera coloradoensis</i>	NI	NI	NI	NI
<i>Penstemon degeneri</i>	NI	NI	NI	NI
<i>Ranunculus karelinii</i> (<i>R. gelidus</i> ssp. <i>grayi</i>)	NI	NI	NI	NI
<i>Salix arizonica</i>	NI	NI	NI	NI
<i>Salix candida</i>	NI	NI	NI	NI
<i>Salix serissima</i>	NI	NI	NI	NI
<i>Utricularia minor</i>	NI	NI	NI	NI

Source: USFS 2003f.

NI = No impact.

Determinations in this table only consider NFS lands that may be directly, indirectly, or cumulatively affected by the Proposed Action, which R2 species determinations are based on. Where potential or occupied habitat is present on adjacent private lands that are part of the project area, additional discussion is provided in the text.

Source: Western Ecosystems, Inc. See text and Literature Cited for references used to assess species' habitat affinities and potential presence on the project area.

Note: Other R2 sensitive plants are not listed because they have not been found on the RGNF, they have no affinities to habitats on the Village at Wolf Creek project area, the project area is outside of the species' range or elevational distribution, and the Proposed Action would have no impact on those species. Plants are listed alphabetically by scientific name.

Alternative 2 would directly affect 1.65 acres of habitats on NFS lands. A breakdown of affected habitats is shown in Table 4.4-1. A total of 1.44 acres of “native” habitats (spruce-fir forest and a 1960s-70s clearcut) would be converted into a year-round road, road shoulders, and early successional utility corridors and unvegetated fill slopes/snow storage areas. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

Indirect Alternative 2 impacts to vegetation communities along the expanded Tranquility Road and utility corridors would be the same as those described under Alternative 1. Project design criteria (Section 2.7, Project Design Criteria Common to All Action All Action Alternatives) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

4.4.3.2 *Operation Direct and Indirect Effects (Long Term)*

Under Alternative 2, long-term direct and indirect operational effects to NFS lands adjacent to the expanded Tranquility Road and utility corridors would be similar to those described above under construction effects. Long term Village at Wolf Creek effects would be similar to those described under Alternative 1. Project design criteria (Section 2.7, Project Design Criteria Common to All Action All Action Alternatives) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing adverse effects on adjacent NFS lands, as described under Alternative 1.

Listed, Proposed, and Sensitive Plants

No federally threatened, endangered, proposed, or Region 2 sensitive plant species would be affected by direct, indirect, or cumulative effects associated with Alternative 2 because they do not occur in the habitats present on the project area. Cumulative effects of private Village at Wolf Creek development are presented in Section A.2.4. Table 4.4-2 summarizes direct, indirect, and cumulative effect determinations of Alternatives 1-4 on Region 2 sensitive plants species.

4.4.4 *Alternative 3 – Snow Shed - East Village Alternative*

4.4.4.1 *Construction Direct and Indirect Effects (Short Term)*

The primary habitat type associated with Alternative 3's Snow Shed - East Village access road and utility corridor is subalpine fir-Engelmann spruce forest, dominated by spruce, with steep (1:1), bouldery, fill slopes associated with the highway, and a willow-graminoid wetland meadow. The forest is the distal, northeastern portion of 46 acres of spruce patch that is surrounded on the south, west, and north by Ski Area parking lots and Highway 160. Southern portions (11.3 acres) of this patch are late-successional (SC 4C) with a high density of standing and down CWD. The remainder (35 acres) of the stand, including portions on the Alternative 3 NFS analysis area, is mature with closed canopies (HSS 4B) and low CWD densities. An unquantified interior portion (< 1 acre) of the 4B stand near the distal end of the Snow Shed - East Village Road on NFS land supports HSS 5 characteristics. However, because this patch is far smaller than the minimum size required to be considered an old-growth community (Erhard et al 1998, Erhard 2004), it was not separately delineated and considered to be other than late-successional forest. The isthmus between this stand and the main stand supports a willow-dominated forested wetland in the understory. The meadow is part of the patchy, native meadow matrix common in this area and supports a stand of planeleaf willow (*Salix planifolia*) averaging 3 to 4 feet tall. The surrounding meadow is dominated by sedges (*Carex* spp.) and cornhusk lily (*Veratrum tenuipetalum*) with tufted hairgrass (*Deschampsia caespitosa*) in upland areas. A mountain willow (*S. monticola*) dominated wetland, supported by an intermittent stream emerging from a culvert under the highway, extends to the toe slope of the highway fill. Additional characterization of these wetlands is provided in the wetlands section.

Alternative 3 would directly affect 2.98 acres of habitats on NFS lands. A breakdown of affected habitats is shown in Table 4.4-1. A total of 2.58 acres of "native" habitats (HSS 4B spruce-fir forest) would be affected along with new modifications to 0.4 acres composing the fill slope and

snow storage area along Highway 160's shoulder. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

Indirect Alternative 3 impacts to vegetation communities along the Snow Shed - East Village access road and utility corridors would be of the same types as those described under Alternative 2. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

4.4.4.2 *Operation Direct and Indirect Effects (Long Term)*

Under Alternative 3, long-term direct and indirect operational affects to NFS lands adjacent to the Snow Shed - East Village access road and utility corridor would be similar to those described above under construction effects. Long-term Village at Wolf Creek effects would be similar to those described under Alternative 1. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing adverse effects on adjacent NFS lands, as described under Alternative 1.

Listed, Proposed, and Sensitive Plants

No federally threatened, endangered, proposed, or Region 2 sensitive plants species would be affected by direct, indirect, or cumulative effects associated with Alternative 3 because they do not occur in the habitats present on the project area. Cumulative effects of private Village at Wolf Creek development are presented in Section A.2.4. Table 4.4-2 summarizes direct, indirect, and cumulative effect determinations of Alternatives 1-4 on Region 2 sensitive plants species.

4.4.5 *Alternative 4 – Dual Access Road Alternative*

4.4.5.1 *Construction Direct and Indirect Effects (Short Term)*

Alternative 4 would directly affect 3.02 acres of habitats on NFS lands. A breakdown of affected habitats is shown in Table 4.4-1. A total of 2.81 acres of “native” habitats (HSS 4C and 4B spruce-fir forest and a 1960s-70s clearcut) would be affected along with 0.21 acres of modifications to unvegetated fill slopes/snow storage areas. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

Indirect Alternative 4 construction impacts to vegetation communities on NFS lands adjacent to the Tranquility and Snow Shed - East Village access roads and utility corridors would be similar to the combination of those described above under Alternatives 2 and 3. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing runoff and sedimentation into streams and the proliferation of noxious weeds on adjacent NFS lands.

4.4.5.2 *Operation Direct and Indirect Effects (Long Term)*

Under Alternative 4, long-term direct and indirect operational affects to NFS lands adjacent to the Tranquility and Snow Shed - East Village access roads and utility corridors would be similar to the combination of those described above under construction effects. Long term Village at Wolf Creek effects would be similar to those described under Alternative 1. Project design criteria (Section 2.7) would be implemented and, based upon their effectiveness in similar contexts, would be largely effective at minimizing adverse effects on adjacent NFS lands, as described under Alternative 1.

Listed, Proposed, and Sensitive Plants

No federally threatened, endangered, proposed, or Region 2 sensitive plants species would be affected by direct, indirect, or cumulative effects associated with Alternative 4 because they do not occur in the habitats present on the project area. Cumulative effects of private Village at Wolf Creek development are presented in Section A.2.4. Table 4.4-2 summarizes direct, indirect, and cumulative effect determinations of Alternatives 1-4 on Region 2 sensitive plants species.

4.5 ANIMAL COMMUNITIES

4.5.1 Analyses Common to All Alternatives

4.5.1.1 *Migratory Birds*

Alternatives associated with the Proposed Action at the Village at Wolf Creek have been evaluated against Forest Plan standards and guidelines to ensure consistency and to eliminate or reduce potential adverse effects to migratory birds. However, none of the birds of Conservation Concern identified by the USFWS in the Southern Rockies Colorado Plateau BCR 16 that occur on the RGNF land breeds or regularly inhabits the project area. As a result, direct, indirect, and cumulative effects of Alternatives 1-4 would not adversely affect identified birds of conservation concern, and these alternatives would be consistent with the MBTA, Executive Order 13186, USFS standards and guidelines, and BCP goals and objectives to conserve migratory and resident birds in Colorado. Therefore, migratory birds are dropped from further consideration herein.

4.5.2 Consistency Review

A consistency analysis comparing Alternatives 1-4 with the RGNF Forest Plan (USFS 1996a, 2003b) has been completed and is contained in the project file. Alternatives 1-4 would be consistent with all RGNF Forest Plan standards and guidelines applicable to the animal resources addressed herein on NFS lands. Therefore, the RGNF Forest Plan consistency analysis is dropped from further consideration herein.

4.5.3 Alternative 1 – No Action Alternative

4.5.3.1 *General Fish and Wildlife*

The Village at Wolf Creek project is an unusual Federal action because the direct and indirect effects associated with the project pale in comparison to the ecological significance of the cumulative effects. This is most apparent under Alternative 1, the No Action Alternative. Under Alternative 1, there would be no direct effects to plant or animal communities on NFS lands because no habitat modification would be authorized. A detailed analysis of cumulative effects to fish and wildlife resources is presented in Section 4.19 and Appendix A, Section A.2.5. The cumulative effects analysis was considered in determining effects to species.

4.5.3.2 *Management Indicator Species*

In summary, the No Action Alternative would have no direct or indirect effects on any RGNF MIS. Effects to occupied and/or potential habitats would occur as a result of cumulative effects on private lands extending onto the surrounding National Forest where habitat effectiveness would be reduced. As a result of cumulative effects associated with Village at Wolf Creek development, Alternative 1 may impact individual brown creeper, hermit thrush, Lincoln's sparrow, Wilson's warbler, elk, mule deer, Rio Grande Cutthroat Trout, and brook trout, but is not likely to significantly affect population or habitat trends on the RGNF. The area affected by the No Action Alternative on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the RGNF. Alternative 1 would have no discernable effects

on the reproductive potential of these species and would not likely result in a loss of species viability on the RGNF.

Brown Creeper

The No Action Alternative would have no direct or indirect effects on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no change to mature and late-successional spruce-fir and mixed-conifer habitats or to the distribution, population, or trend of this species on the RGNF. Under Alternative 1, direct, indirect, and cumulative effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Brown creepers and mature and late-successional spruce-fir and mixed-conifer habitats would remain relatively abundant and widely distributed across the Forest. Alternative 1 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines. Alternative 1 would also maintain viable populations of brown creepers and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Hermit Thrush

The No Action Alternative would have no direct impact on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no change to mature to late-successional spruce-fir and mixed-conifer habitats or to the population or trend of this species on the RGNF. Under Alternative 1, direct, indirect, and cumulative effects would be insignificant and discountable on this species' Forest-wide population, distribution, and trend. Hermit thrushes and mature and late-successional spruce-fir and mixed-conifer habitats would remain relatively abundant and widely distributed across the Forest. Alternative 1 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines. Alternative 1 would also maintain viable populations of hermit thrushes and other species associated with mature and late-successional conifer habitats with the estimated numbers and habitat distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Lincoln's Sparrow

The No Action Alternative would have no direct impact on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no change to montane and subalpine willow carrs or to the population or trend of this species on the RGNF. Under Alternative 1, direct, indirect, and cumulative effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Lincoln's sparrows and riparian willow communities would remain relatively abundant and widely distributed across the RGNF. Alternative 1 would be consistent with NFMA direction and applicable Forest Plan standards and guidelines. Alternative 1 would also maintain viable populations of Lincoln's sparrows and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Wilson's Warbler

The No Action Alternative would have no direct impact on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no change to montane and subalpine willow carrs or to the population or trend of this species on the RGNF. Direct, indirect, and cumulative Alternative 1 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Wilson's warblers and riparian willow communities would remain relatively abundant and widely distributed across the Forest. Alternative 1 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines. Alternative 1 would also maintain viable populations of Wilson's warblers and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Rocky Mountain Elk

The No Action Alternative would have no direct impact on elk because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no direct change to the population, trend, or seasonal habitats occupied by this species on the RGNF. While cumulative effects of Alternative 1 would be appreciable and far ranging, they would be unlikely to adversely affect the population, trend, or habitat distribution of elk across the RGNF. Elk herds are above management objectives across the Forest and in DAU E-34, which contains the project area and much of the cumulative effects area. While populations are influenced primarily by winter range availability, winter severity, and hunter harvest, cumulative Village at Wolf Creek effects would have an incremental, adverse influence on DAU E-34 herd numbers and trend, though the effects may not be discernable from other variables. The No action Alternative would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines. Alternative 1 would also maintain viable elk populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF year-round.

Mule Deer

The No Action Alternative would have no direct impact on mule deer because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no direct change to the population, trend, or seasonal habitats occupied by this species on the RGNF. While cumulative effects of Alternative 1 would be appreciable and far ranging, they would be unlikely to measurably affect the population, trend, or habitat distribution of deer across the RGNF. Deer herds are slightly below management objectives across the Forest and in DAU D-36, which contains the project area and much of the cumulative effects area. While populations are influenced primarily by winter range availability, winter severity, and hunter harvest, cumulative Village at Wolf Creek effects would make an incremental, adverse influence on DAU D-36 herd numbers and trend, though the effects may not be discernable from other variables. The No Action Alternative would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines. Alternative 1 would also maintain viable deer populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF year-round.

Rio Grande Cutthroat Trout

Alternative 1 would have no direct impact on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no direct change to the population, trend, or distribution of occupied and potential aquatic habitats of this species on the RGNF. Direct, indirect, and cumulative Alternative 1 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Rio Grande Cutthroat Trout would remain uncommon, but well distributed across the Forest. The No action Alternative would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable, well-distributed Rio Grande Cutthroat Trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence across the RGNF.

Brook Trout

Alternative 1 would have no direct impact on this species because no habitat modifications would be authorized on NFS lands. Alternative 1 would result in no direct change to the population, trend, or habitat distribution of occupied and potential aquatic habitats of this species on the RGNF. Direct, indirect, and cumulative Alternative 1 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Brook trout would remain abundant and widely distributed across the Forest. The No Action Alternative would be consistent with NFMA direction and applicable Forest Plan objectives, standards, and guidelines, and the MIS monitoring question for maintaining viable, well-distributed populations of brook trout and other aquatic species with the estimated numbers and distribution of reproductive individuals to insure their continued existence across the RGNF.

4.5.3.3 *Region 2 Sensitive Animal Species*

In summary, the No Action Alternative would have no direct or indirect effects on any R2 sensitive animal species. Effects to occupied and/or potential habitats would occur as a result of cumulative effects on private lands extending onto the surrounding National Forest where habitat effectiveness would be reduced. As a result of cumulative effects associated with the Village at Wolf Creek development, Alternative 1 may impact individual Rio Grande cutthroat trout, boreal toads, northern leopard frogs, northern goshawks, northern harriers, American peregrine falcons, boreal owls, three toed woodpeckers, olive-sided flycatchers, American marten, and North American wolverine, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide (Table 4.5-1). The area affected by the No Action Alternative on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the Forest. Alternative 1 would have no discernable effect on the reproductive potential of these species and would not likely result in a loss of species viability on the Forest. The No Action Alternative would have no impact on any other R2 animal species on the RGNF.

Table 4.5-1. Determination Summary of Wolf Creek Village Alternative Effects on R2 Sensitive Animal Species Potentially Present on the RGNF.

Common name, <i>Scientific name</i>	Alternative			
	1	2	3	4
INSECTS				
Nokomis fritillary, <i>Speyeria nokomis nokomis</i>	NI	NI	NI	NI
FISH				
Rio Grande chub , <i>Gila pandora</i>	NI	NI	NI	NI
Rio Grande sucker , <i>Catostomus plebeius</i>	NI	NI	NI	NI
Rio Grande cutthroat trout , <i>Oncorhynchus clarki virginalis</i>	MAII	MAII	MAII	MAII
AMPHIBIANS				
Boreal western toad , <i>Bufo boreas boreas</i>	MAII	MAII	MAII	MAII
Northern leopard frog , <i>Rana pipiens</i>	MAII	MAII	MAII	MAII
BIRDS				
Northern goshawk , <i>Accipiter gentilis</i>	MAII	MAII	MAII	MAII
Northern harrier , <i>Circus cyaneus</i>	MAII	MAII	MAII	MAII
Ferruginous hawk, <i>Buteo regalis</i>	NI	NI	NI	NI
American peregrine falcon , <i>Falco peregrinus anatum</i>	MAII	MAII	MAII	MAII
White-tailed ptarmigan, <i>Lagopus leucurus</i>	NI	NI	NI	NI
Gunnison sage grouse, <i>Centrocercus minimus</i>	NI	NI	NI	NI
Mountain plover, <i>Charadrius montanus</i>	NI	NI	NI	NI
Yellow-billed cuckoo, <i>Coccyzus americanus</i>	NI	NI	NI	NI
Burrowing owl, <i>Athene cunicularia</i>	NI	NI	NI	NI
Flammulated owl, <i>Otus flammeolus</i>	NI	NI	NI	NI
Boreal owl , <i>Aegolius funereus</i>	MAII	MAII	MAII	MAII
Black swift, <i>Cypseloides niger</i>	NI	NI	NI	NI
Lewis’s woodpecker, <i>Melanerpes lewis</i>	NI	NI	NI	NI
Three-toed woodpecker , <i>Picoides tridactylus</i>	MAII	MAII	MAII	MAII
Olive-sided flycatcher , <i>Contopus cooperi</i>	MAII	MAII	MAII	MAII
Loggerhead shrike, <i>Lanius ludovicianus</i>	NI	NI	NI	NI
Brewer’s sparrow, <i>Spizella breweri</i>	NI	NI	NI	NI
Sage sparrow, <i>Amphispiza belli</i>	NI	NI	NI	NI
MAMMALS				
Fringed myotis, <i>Myotis thysanodes</i>	NI	NI	NI	NI
Townsend’s big-eared bat, <i>Corynorhinus townsendii pallescens</i>	NI	NI	NI	NI
Gunnison’s prairie dog, <i>Cynomys gunnisoni</i>	NI	NI	NI	NI
American marten , <i>Martes americana</i>	MAII	MAII	MAII	MAII
North American wolverine , <i>Gulo gulo luscus</i>	MAII	MAII	MAII	MAII

Other R2 sensitive animals are not listed because they have not been found on the RGNF, they have no affinities to habitats on the Wolf Creek Village project area, the project area is outside of the species' range or elevational distribution, and the proposed action would have no impact on those species. Species in **bold** are potentially present and/or are discussed in the text. Wildlife are listed phylogenetically.

NI = No impact.

MAII = may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Determinations in this table only consider NFS lands that may be directly, indirectly, or cumulatively affected by the proposed action, which R2 species determinations are based on. Where potential or occupied habitat is present on adjacent private lands that are part of the project area, additional discussion is provided in the text.

Source: USFS 2003f and Western Ecosystems, Inc. See text and Literature Cited for references used to assess species' habitat affinities and potential presence on the project area.

With respect to the animal impact assessments herein, the reader should note that every acre of potential habitat is not necessarily occupied by a particular species, and that every acre of suitable habitat is not of equal importance, nor must it be maintained to maintain effective, well-distributed habitat for any particular species across the Forest. The USFS concludes that some habitat loss or impact may affect individuals as long as sufficient habitat components exist which maintain population viability across the Forest. In addition, “impacts” and “adverse affects” on individuals considered herein do not necessarily equate with the death of those individuals. In most cases, adverse affects on NFS lands simply refer to the displacement of individuals from a small portion of their former territory or potential habitat. Furthermore, as a document evaluating worst case scenarios, many of the predicted adverse affects may be unrealized; for example, where unoccupied, but potential habitat that would be lost to an action is actually uninhabited by a particular species.

Rio Grande Cutthroat Trout

Rio Grande Cutthroat Trout are addressed above as a MIS and the interested reader is referred to that section for the discussion of this species. Alternative 1 would have no direct or indirect impacts on this species because no habitat modifications would be authorized on NFS lands. However, because of likely cumulative effects extending onto the Forest from the Village development, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Western Toad

Boreal toads are not present in the ephemeral pond straddling the private/NFS property line. Toads would also not likely colonize the pond on their own or be introduced in an attempt to recover the population. However, the pond represents potentially suitable breeding habitat. Alternative 1 would have no direct or indirect impacts on this species because no habitat modifications would be authorized on NFS lands. Cumulative effects resulting from Alternative 1 would likely degrade the suitability of this pond for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied breeding habitat on the portion of the pond that occurs on NFS land, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Leopard Frog

Northern leopard frogs are not present in the ephemeral pond straddling the private/NFS property line or elsewhere in the Village at Wolf Creek project area. These frogs would also not likely colonize the pond on their own or be introduced in an attempt to recover the population. However, the pond represents potentially suitable breeding habitat. Alternative 1 would have no direct or indirect impacts on this species because no habitat modifications would be authorized on NFS lands. Cumulative effects resulting from Alternative 1 would likely degrade the suitability of this pond for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied breeding habitat on the portion of the pond that occurs on NFS land, Alternative 1 may impact

individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Goshawk

Alternative 1 would have no direct or indirect adverse effects on northern goshawks because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development, goshawk habitat effectiveness (i.e., foraging and nesting habitat) could be adversely affected on private and NFS lands adjacent to the private parcel. Anticipated cumulative effects on NFS lands would likely be minor. It is unlikely that dispersed recreational use would extend to an occupied nest site and adversely affect it in some way. Dispersed recreation would be more likely to result in minor, temporary displacement of foraging birds. These effects are considered insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Harrier

No evidence of harriers was detected on or around the project area and it is unlikely that harriers would have any affinity to project area habitats other than during summer and fall migration when they may wander through the natural meadows and larger wetlands in the area. Alternative 1 would have no direct or indirect adverse effects on northern harriers because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development in Alberta Park wetlands, harrier habitat effectiveness (i.e., potential summer and migration foraging habitat) could be adversely affected on private land and NFS lands adjacent to the northwestern corner of the private parcel. Anticipated cumulative effects on NFS lands would likely be minor, since wetland habitats composing the majority of potential harrier habitat would be avoided by and buffered from development. These effects are considered insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Peregrine Falcon

No active peregrine falcon eyries are present in the vicinity of the project area such that those sites or surrounding hunting habitats which might be affected by direct, indirect, or reasonably foreseeable effects of the proposed action. The project area is mostly forested. Peregrines do not hunt below the forest canopy, but rather above the canopy and in open habitats. The regenerating clearcut, wetlands, and natural meadows on and around the project area do not represent particularly attractive hunting habitat because they are relatively small, do not support above average prey densities, and the area is relatively distant from potential nesting terrain. While the prey base associated with these open habitats is insufficient by itself to represent “stopover habitat”, migrants could opportunistically use it. Nevertheless, it is extremely unlikely that the small amount of potential prey available within the small area of these affected habitats would be used by a limited number of migrating birds. Alternative 1 would have no direct or indirect adverse effects on peregrine falcons because no habitat modification would be authorized. Potential habitat loss, perforation effects, and human activities associated with private land

development would result in a net loss of low quality, opportunistic foraging habitat that could be used during migration. Anticipated cumulative effects extending onto NFS lands would likely be minor, since wetland habitats composing the majority of potential foraging habitats would be avoided by and buffered from, development. These effects are considered insignificant and discountable. As such, direct, indirect, and cumulative effects of Alternative 1 may impact individuals, but are not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Owl

Alternative 1 would have no direct or indirect adverse effects on boreal owls because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development, boreal owl habitat effectiveness (i.e., foraging and nesting habitat) could be adversely affected on private and NFS lands adjacent to the private parcel if an adjacent nest site or territory on the Forest extended into the private parcel. Anticipated cumulative effects on NFS lands would likely be minor. It is unlikely that activities extending from the private parcel onto the Forest would directly affect any nest site or result in habitat modifications that would affect the prey base. Village at Wolf Creek cumulative effects extending onto the Forest are considered insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Three-toed Woodpecker

Alternative 1 would have no direct or indirect adverse effects on three-toed woodpeckers because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development, three-toed woodpecker habitat effectiveness (i.e., foraging and nesting habitat) could be adversely affected on private and NFS lands adjacent to the private parcel if an adjacent nest site or territory on the Forest extended into the private parcel. Anticipated cumulative effects on NFS lands would likely be minor. It is unlikely that activities extending from the private parcel onto the Forest would directly affect any nest site or result in habitat modifications that would affect foraging behavior. Village at Wolf Creek cumulative effects extending onto the Forest are considered insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Olive-sided Flycatcher

Alternative 1 would have no direct or indirect adverse effects on olive-sided flycatchers because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development, olive-sided flycatcher habitat effectiveness (i.e., foraging and nesting habitat) could be adversely affected on private and NFS lands adjacent to the private parcel if an adjacent nest site or territory on the Forest extended into the private parcel. It is unlikely that activities extending from the private parcel onto the Forest would directly affect any nest site or result in habitat modifications that would affect foraging behavior. Village at Wolf Creek cumulative effects extending onto the Forest

would be insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Marten

Alternative 1 would have no direct or indirect adverse effects on marten because no habitat modification would be authorized. However, because of habitat loss, perforation effects, and human activities associated with private land development, marten habitat effectiveness (i.e., foraging, travel, and denning habitat) could be adversely affected on private and NFS lands adjacent to the private parcel. This relatively large habitat block likely overlaps the boundaries of several territories. Some of these territories likely extend beyond the private parcel onto contiguous, similar, and higher quality NFS lands. Village at Wolf Creek cumulative effects extending onto the Forest are considered insignificant and discountable. As such, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

North American Wolverine

Potential effects of the Village at Wolf Creek project on wolverine focuses on impacts to historic, but in all likelihood, unoccupied habitat and the extent to which the project could adversely affect a future recovery effort. Alternative 1 would have no direct or indirect adverse effects on wolverine because no habitat modification would be authorized. However, because of indirect habitat loss, perforation effects, and human activities associated with private land development, wolverine habitat effectiveness (i.e., foraging, travel, and denning habitat) would be adversely affected on private and NFS lands adjacent to the private parcel. This relatively large habitat block is insignificant at the scale of a single wolverine home range. A future recovery effort, which would be the only way a self-sustaining population could be reestablished in the southern Rockies, is not reasonably foreseeable, therefore, it is not applicable to this analysis. Cumulative Village at Wolf Creek effects extending onto the Forest are considered insignificant and discountable. Nevertheless, Alternative 1 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

4.5.3.4 *Threatened, Endangered, and Candidate Animal Species*

Table 4.5-2 summarizes determination effects by Alternative 1. In summary, Alternative 1 is “likely to adversely affect” the Canada lynx and its habitat. The No Action Alternative would have “no effect” on the Uncompahgre fritillary butterfly, Colorado pikeminnow, razorback sucker, bald eagle, Mexican spotted owl, southwestern willow flycatcher, or any other listed or proposed species, or designated critical habitat. Uncompahgre fritillary, Colorado pikeminnow, razorback sucker, Mexican spotted owl, and southwestern willow flycatcher habitat is not present and would not be affected. Potential, but unoccupied, bald eagle habitat is present adjacent to the project area. Individual accounts of potential Alternative 1 impacts to those listed species considered in this document and carried forward are provided below.

Table 4.5-2. Determination Summary of Wolf Creek Village Alternative Effects on Federally Listed Species Potentially Present on the RGNF.

Species	Determination			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Uncompahgre fritillary butterfly, <i>Boloria acrocnema</i>	NE	NE	NE	NE
Colorado pikeminnow, <i>Ptychocheilus lucius</i>	NE	NE	NE	NE
Razorback sucker, <i>Xyrauchen texanus</i>	NE	NE	NE	NE
Bald eagle, <i>Haliaeetus leucocephalus</i>	NE	NE	NE	NE
Mexican spotted owl, <i>Strix occidentalis lucida</i>	NE	NE	NE	NE
Southwestern willow flycatcher, <i>Empidonax trailii extimus</i>	NE	NE	NE	NE
Canada lynx, <i>Lynx canadensis</i>	LAA	LAA	LAA	LAA

Source: USFWS 2004 and Western Ecosystems, Inc.

Note: Other federally listed species are not listed because they have not been found on the RGNF, they have no affinities to habitats on the Wolf Creek Village project area, the project area is outside of the species' range or elevational distribution, and the proposed action would have no effect on those species. Species are listed phylogenetically. Determinations effects consider direct, indirect, and cumulative effects.

NE = No effect.

LAA = Likely to adversely affect.

Bald Eagle

No suitable bald eagle habitat is present on the project area, although potential habitat occurs nearby. Alberta Park Reservoir, located adjacent to the project area, supports a healthy brook trout population that could represent a potential foraging area which could be briefly used in fall (i.e., after eagles arrive in the area in November) before it freezes over. However, bald eagles have not been reported on this reservoir (Pitcher 2004c), and it is unlikely that eagles would be able to effectively use the relatively high elevation reservoir during the brief, fall open-water period because of its light to moderate use by fisherman. This potential habitat is, therefore, considered unoccupied and unsuitable. Future CDOW management options for this fishery would consider effects of the Village at Wolf Creek development, but those options are not reasonably foreseeable or certain, and it is likely that management efforts would at least maintain the current value of the fishery and (unintentionally) its unlikely bald eagle use. Direct, indirect, and cumulative effects of Alternatives 1-4 would have no effect on the bald eagle and this species is dropped from further consideration herein.

Canada Lynx

Trout-Handkerchief Lynx Analysis Unit

Under Alternative 1, there would be no modifications to lynx habitat on NFS land (Table 4.5-3). The environmental baseline of lynx habitats shown in Table 4.5-3 would remain unchanged as a result of direct and indirect Alternative 1 effects on NFS land.

Table 4.5-3. Acreage of Lynx Habitat Modifications on NFS Lands by Alternatives 1-4 at Wolf Creek Village.

Lynx Habitat ^a	Acreage			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
USFS Lands				
Winter Foraging	0	-0.93	-2.58	-2.3
Denning	0	0	0	0
Other	0	0	0	0
Non-habitat	0	0	0	0
Suitable	0	0	0	0
Unsuitable	0	+0.93	+2.58	+2.3
Total Habitat Modifications ^b	0	1.65	2.98	3.02

Source: Western Ecosystems, Inc.

^a See text or USFS (2004b) for definitions.

^b Acreage differences between lynx habitat lost (-) or gained (+) and total habitat modifications (Table 4.4-1) is the result of impacts to presently unsuitable habitat that would not result in any change in lynx habitat classification.

Reasonably certain cumulative development effects on lynx are presented in Section 4.19 and Appendix A.2.5. Table A.2.5-1 indicates that under Alternatives 1-4, Village at Wolf Creek development would convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Direct, indirect, and cumulative habitat modifications to lynx habitat in the THLAU are shown in Table 4.5-4 by acres, and as a percentage of total lynx habitat in the THLAU. Table 4.5-5 shows acreages and percentages of lynx habitats in the THLAU considering direct, indirect, and cumulative (including Village at Wolf Creek and Saddlebrook) habitat modifications to lynx habitat resulting from implementation of Alternatives 1-4. Resulting lynx habitat acreages under all alternatives would continue to meet quantitative habitat percentages recommended by the LCAS (Ruediger et al. 2000).

Table 4.5-4. Acreage and Percentage of Lynx Habitat Modifications on NFS and Private Village at Wolf Creek Lands by Alternatives 1-4.

Lynx Habitat ^a	Acreage (Percentage)			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
USFS and Village at Wolf Creek ^b Lands				
Winter Foraging	-140 (-0.1)	-141 (-0.11)	-143 (-0.11)	-142 (-0.11)
Denning	0 (0)	0 (0)	0 (0)	0 (0)
Other	-1 (-0.0007)	-1 (-0.0007)	-1 (-0.0007)	-1 (-0.0007)
Non-habitat	0 (0)	0 (0)	0 (0)	0 (0)
Suitable	0 (0)	0 (0)	0 (0)	0 (0)
Unsuitable	+141 (+0.11)	+142 (+0.11)	+144 (+0.11)	+143 (+0.11)

Source: Western Ecosystems, Inc.

^a See text or USFS (2004b) for definitions. Acreage (%) is based on changes to 134,216 acres of lynx habitat in the LAU. Numbers rounded.

^b See Table A.2.5-1 for lynx habitat modifications on Village at Wolf Creek lands only.

Note: Saddlebrook effects were considered, but they would not contribute any habitat changes because proposed development would only affect designated non-habitat.

Table 4.5-5. Updated Lynx Habitat Statistics in the 176,750-acre Trout-Handkerchief LAU (THLAU; LAU #20913) under Implementation of Alternatives 1-4 at Wolf Creek Village.

Habitat Description	Acres of Habitat in LAU ^a				Percent of all Lynx habitat in LAU ^a			
	Alternatives							
	1	2	3	4	1	2	3	4
Winter Foraging	14,250	14,249	14,247	14,248	10.62	10.62	10.61	10.62
Denning	51,786	51,786	51,786	51,786	38.58	38.58	38.58	38.58
Other	42,134	42,134	42,134	42,134	31.39	31.39	31.39	31.39
Non-habitat	42,534	42,534	42,534	42,534	24.06	24.06	24.06	24.06
Suitable	108,311	108,311	108,311	108,311	80.69	80.69	80.69	80.69
Unsuitable	26,046	26,047	26,049	26,048	19.41	19.41	19.41	19.41
Total Lynx Habitat	134,216	134,216	134,216	134,216	75.94	75.94	75.94	75.94

^a Acres rounded to nearest acre. Percent rounded to 0.01%.

Source: Updated USFS (2004b, Gomez 2004) habitat mapping and classification criteria. This table is in a format requested by Broderdorp (2003). See Table 3.5-6 for environmental baseline statistics.

Note: This table includes direct, indirect, and cumulative (private Village at Wolf Creek) effects in the THLAU. Saddlebrook effects were considered, but they would not contribute any habitat changes because proposed development would only affect designated non-habitat.

Alternative 1 Consistency with the Forest Plan

A consistency analysis, comparing Alternatives 1-4 with the RGNF Forest Plan (1996, 2003), has been completed and is detailed in Appendix C. Alternatives 1-4 would be consistent with all RGNF Forest Plan standards and guidelines applicable to the management of lynx habitat on NFS lands.

By agreement (USFS and USFWS 2000), the USFS is currently in the process of amending Forest Plans in the Southern Rockies geographic area, which includes the RGNF, to add measures necessary to conserve the lynx, considering the information and recommendations included in the Canada Lynx Conservation Assessment and Strategy (LCAS, Ruediger et al. 2000; discussed below). Until the RGNF Forest Plan is so amended, the USFS has agreed to review and consider the recommendations in the LCAS during the analysis and decision-making processes.

Alternative 1 Consistency with the Canada Lynx Conservation Assessment and Strategy

The LCAS (Ruediger et al. 2000) was developed to provide a consistent and effective approach to conserve Canada lynx on Federal lands in the conterminous U.S. The conservation measures presented in the LCAS were developed to be used as a tool for conferencing and consultation, as a basis for evaluating the adequacy of current programmatic plans, and for analyzing effects of planned and on-going projects on lynx and lynx habitat.

A consistency analysis, comparing Alternatives 1-4 with conservation measures in the LCAS, has been completed and is contained in the project file. Alternative 1 would be consistent with all applicable conservation measures in the LCAS. Village at Wolf Creek cumulative development effects would adversely affect lynx habitat on private and NFS lands. However, the LCAS applies only to lynx habitat on Federal lands, and under the No Action Alternative, the USFS would not authorize an action that would result in, or facilitate, cumulative effects that

would adversely affect lynx habitat on NFS lands within the designated Wolf Creek Pass Landscape Linkage.

Landscape Connectivity and Lynx Movements

Alternative 1 would have no direct or indirect adverse effects on lynx movements or landscape connectivity on NFS lands within the designated Wolf Creek Pass Landscape Linkage, as there would be no Federal action. However, because of human activities associated with private land development, cumulative habitat loss and perforation would result in reduced lynx habitat effectiveness and connectivity (i.e., foraging, travel, and denning habitat), such that lynx and their habitats would be adversely affected on private and NFS lands adjacent to the private parcel and along the Highway 160 corridor through the Wolf Creek Pass Landscape Linkage.

Alternative 1 Lynx Determination

Alternative 1 would have no direct or indirect adverse effects on lynx or lynx habitat on NFS lands within the designated Wolf Creek Pass Landscape Linkage, as there would be no Federal action. Selection of this alternative by the USFS would be consistent with all applicable, lynx-related provisions of the LCAS (Ruediger et al. 2000) to conserve Canada lynx on Federal lands. Direct and indirect Alternative 1 effects, in and of themselves, are not likely to adversely affect the lynx.

However, ESA direction (USFWS and NMFS 1998) also requires consideration of cumulative effects for project determinations. Reasonably certain cumulative effects (private Village at Wolf Creek development) would appreciably impair lynx habitat connectivity and increase the risk of “take” of individual lynx from vehicular collision along the Highway 160 corridor through the Wolf Creek Pass Landscape Linkage. In addition, indirect habitat loss, perforation, and human activities associated with Village at Wolf Creek development would result in reduced lynx habitat effectiveness and connectivity (i.e., foraging, travel, and denning habitat), such that lynx and their habitats would be adversely affected on private and NFS lands adjacent to the private parcel. Given the above ESA direction, and considering the cumulative effects of reasonably certain future actions in the action area (Appendix A.2.5), Alternative 1 would be “likely to adversely affect” the Canada lynx.

4.5.4 Alternative 2 – Proposed Action

4.5.4.1 General Fish and Wildlife

Alternative 2 effects on the animal community are virtually the same as Alternatives 1, 3, and 4 because Village at Wolf Creek development of the private parcel is assumed to be virtually identical under Alternatives 1-4, and it would be the cumulative impacts associated with Village at Wolf Creek development that would have the profound, irreversible ecological effects summarized above under Alternative 1. In addition to Alternative 1 effects, Alternative 2 would affect 1.65 acres of habitat on NFS land (Table 4.4-1), including 1.44 acres of vegetated habitats and 0.21 acres of previously developed habitats. With Alternative 2, the access road and utility corridors overlap a zone of influence where wildlife habitat effectiveness is reduced.

4.5.4.2 *Management Indicator Species*

In summary, the Alternative 2 would directly impact 1.65 acres of terrestrial habitat and local stream reaches occupied by MIS. Effects to occupied and/or potential habitats would occur as a result of habitat modifications and indirect effects to NFS lands and cumulative effects on private lands extending onto the surrounding National Forest where habitat effectiveness would be reduced. As a result of cumulative effects associated with Village at Wolf Creek development, Alternative 2 may impact individual brown creeper, hermit thrush, Lincoln's sparrow, Wilson's warbler, elk, mule deer, Rio Grande cutthroat trout, and brook trout, but is not likely to significantly affect population or habitat trends on the Forest. The area affected by Alternative 2 on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the Forest. Alternative 2 would have no discernable effect on the reproductive potential of these species and would not likely result in a loss of species viability on the Forest.

Brown Creeper

Alternative 2 would directly impact 0.93 acre of occupied (HSS 4C and 4B spruce-fir) brown creeper habitat on the RGNF. No creepers were detected in the 0.23 acre HSS 4B spruce stand that would be affected by the #3 utility corridor, and it appears that this stand has not developed the late-successional characteristics that this species is associated with. However, as a worst case scenario, this affected acreage is also included in the impact analysis. Based on the acres of HSS 4B and 4C spruce-fir in the areas that would be directly affected by Alternative 2 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/5 acre, Gillihan 2002), and on full occupancy of available habitat, Alternative 2 would affect up to 0.2 brown creeper pairs/territories. Alternative 2 would directly affect up to 0.00015 percent of the available creeper habitat and creeper population thought to be present on the RGNF. Realistically, up to several pairs/territories of creepers could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 2 effects of Village at Wolf Creek development on brown creeper habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1.

Direct, indirect, and cumulative Alternative 2 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Brown creepers would remain relatively abundant and widely distributed across the Forest. Considering direct, indirect, and cumulative Alternative 2 effects under all Forest Plan budget levels, the quality and quantity of creeper habitat remain above historic averages during the life of the Forest Plan, and creeper populations would remain above the average relative density that may have occurred under the natural disturbance regime. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of brown creepers and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Hermit Thrush

Alternative 2 would directly impact 0.93 acre of occupied, primary (HSS 4C and 4B spruce-fir) hermit thrush habitat on the RGNF. Based on the acres of HSS 4B and 4C spruce-fir in the areas that would be directly affected by Alternative 2 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/10 acres; Gillihan 2002), and on full occupancy of available habitat, Alternative 2 would affect up to 0.09 hermit thrush pairs/territories. Alternative 2 would directly affect up to 0.00015 percent of the available habitat and hermit thrush population thought to be present on the RGNF. Realistically, up to several pairs/territories of hermit thrushes could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 2 effects of Village at Wolf Creek development on hermit thrush habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1. Direct, indirect, and cumulative Alternative 2 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Hermit thrushes and mature and late-successional spruce-fir and mixed-conifer habitats would remain relatively abundant and widely distributed across the Forest. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of hermit thrushes and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Lincoln's Sparrow

Alternative 2 would have no direct or indirect impacts on this species because no habitat modifications to montane and subalpine willow carrs representing occupied or potential habitat for this species would occur on the RGNF. As such, no Lincoln's sparrow habitat, or any portion of the RGNF population, would be affected by Alternative 2. Village at Wolf Creek development that would occur under Alternative 2 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives, which are considered on NFS lands only.

Direct, indirect, and cumulative Alternative 2 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Lincoln's sparrows would remain relatively abundant and widely distributed across the Forest. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Lincoln's sparrows and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Wilson's Warbler

Alternative 2 would have no direct or indirect impacts on this species because no habitat modifications to montane and subalpine willow carrs representing occupied or potential habitat for this species would occur on the RGNF. As such, no Wilson's warbler habitat, or any portion of the RGNF population, would be affected by Alternative 2.

Village at Wolf Creek development that would occur under Alternative 2 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives, which are considered only on NFS lands.

Direct, indirect, and cumulative Alternative 2 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Wilson's warblers would remain relatively abundant and widely distributed across the Forest. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Wilson's warblers and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Rocky Mountain Elk

Alternative 2 would directly impact 1.44 acres of occupied summer elk habitat on the RGNF. Indirect effects associated with road use across NFS lands include the displacement of animals from habitats adjacent to the road and reduced effectiveness of those habitats. These effects would involve an area much larger than the area of direct habitat loss. The effectiveness of these habitats, located between Highway 160, the Ski Area's base area, and FSR 391, is already impaired. Considering the extent to which these adjacent habitats would be further isolated and disturbed by the proposed road, its chronic use, and adjacent Village at Wolf Creek development, it is likely that the entire ±100-acre habitat patch surrounded by these developments would be effectively lost to future elk use. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Cumulative effects to elk are discussed in Appendix A, Section A.2.5, and would be identical to those described above under Alternative 1.

While direct, indirect, and cumulative effects of Alternative 2 would be appreciable and far-ranging, they would be unlikely to measurably affect the population, trend, or habitat distribution of elk across the RGNF for the reasons described above under Alternative 1. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable elk populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Mule Deer

Alternative 2 would directly impact 1.44 acres of occupied summer mule deer habitat on the RGNF. Indirect effects associated with use road use across NFS lands would include the same displacement and reduced habitat effectiveness described above for elk, but would probably not result in the complete avoidance of the habitat patch that would be surrounded by roads and the Village at Wolf Creek development. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Deer would remain relatively abundant and widely distributed across the Forest. Cumulative effects on mule deer are discussed in Appendix A.2.5 and would be identical to those described above under Alternative 1. While direct, indirect, and cumulative effects of Alternative 2 would be appreciable and far-ranging, they would be unlikely to measurably affect the population, trend, or habitat distribution of mule deer across the RGNF for the reasons described above under Alternative 1. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable deer populations with the estimated numbers and distribution of reproductive individuals to insure that their continued existence is well distributed across the RGNF.

Rio Grande Cutthroat Trout

Alternative 2 would have insignificant sedimentation effects on this species on the Forest as a result of avoided and minimized (via implementation of project design criteria) sedimentation effects associated with widening Tranquility Road across several East Fork Pass Creek tributaries. Alternative 2 effects would result in no direct or indirect changes to the population, trend, or distribution of occupied and potential habitats of this species on the RGNF. Rio Grande Cutthroat Trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 2 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel, and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 2 to would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 2 effects would be insignificant on this species' Forest-wide population, habitat distribution, and trend. Rio Grande Cutthroat Trout would remain uncommon, but well distributed across the Forest. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable Rio Grande Cutthroat Trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Brook Trout

Alternative 2 would have insignificant sedimentation effects on this species on the Forest as a result of avoided and minimized (via implementation of project design criteria) sedimentation effects associated with widening the Tranquility Road across several East Fork Pass Creek tributaries. Alternative 2 effects would result in no direct or indirect changes to the population,

trend, or distribution of occupied and potential habitats of this species on the RGNF. Brook trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 2 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel, and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 2 to would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 2 effects would be insignificant on this species' Forest-wide population, habitat distribution, and trend. Brook trout would remain abundant and widely distributed across the Forest. Alternative 2 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable brook trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

4.5.4.3 *Region 2 Sensitive Animal Species*

In summary, Alternative 2 may impact individual Rio Grande cutthroat trout, boreal toads, northern leopard frogs, northern goshawks, northern harriers, peregrine falcons, boreal owls, three toed woodpeckers, olive-sided flycatchers, American marten, and North American wolverine, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide (Table 4.5-1). Effects to occupied and/or potential habitats would occur as a result of 1.44 acres of native habitat conversion and indirect effects on NFS lands and cumulative effects on private lands extending onto surrounding NFS lands where habitat effectiveness would be reduced. For the above species that are not present on disturbance areas at the time of construction, reduced potential habitat availability should have no discernable affect on local population viability. For those species even occasionally present in disturbance areas, the additional habitat perforation, increased edge effects, reduced block size, reduced habitat connectivity, reduced forage/prey availability, increased human disturbance, and/or other ecological effects may displace individuals from impact areas and adjacent zones of influence and reduce local habitat effectiveness. For species with larger home ranges, project effects may influence foraging, breeding, and/or travel use of habitats beyond the project area. The area affected by the Alternative 2 contains an insignificant proportion of the total population and potential range of each of the above species on the Planning Area. Alternative 2 would have no discernable effect on the reproductive potential of these species. Alternative 2 would have no impact on any other R2 animal species on the RGNF, as they have no habitat within the project area.

Rio Grande Cutthroat Trout

Rio Grande Cutthroat Trout are addressed above as a MIS and the interested reader is referred to that section for the discussion of this species. Alternative 2 would have insignificant sedimentation effects on this species on the Forest as a result of minimized (via implementation of project design criteria) sedimentation effects associated with widening Tranquility Road across several East Fork Pas Creek tributaries. Effects extending onto the Forest from the

Village at Wolf Creek development could also affect this species. Likely indirect effects to NFS lands include water quality and aquatic habitat degradation resulting from unintended toxic discharges/ runoff (e.g., from roads and other impermeable surfaces, snow storage, pet waste, chemical spills, equestrian facilities, wastewater effluent, septic systems, etc.) into occupied habitat in West Fork Pass Creek and Alberta Reservoir, and unoccupied, but potential habitat in East Fork Pass Creek. Pollutants affecting aquatic and riparian vegetation could extend further off-site, with effects becoming diluted with increasing distance and water volume. Proposed winter water diversions and transbasin water contributions could adversely affect streamflows, eliminate overwintering habitat, and lead to more concentrated effluent discharge effects (i.e., reduced dilution). Greater fishing pressure at Alberta Park Reservoir would likely result in greater mortality of Rio Grande Cutthroat Trout as a result of injured fish and those taken illegally, however, because this population is frequently monitored and maintained by CDOW stocking, management could be adjusted to maintain this population. Effects of degraded riparian zones and aquatic habitat quality resulting from service development (i.e., sewage lines proposed through riparian corridors), service use, and dispersed recreation (e.g., volunteer trails), would largely be confined to the private parcel, although minor sedimentation and other effects could extend downstream. Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Western Toad

Alternative 2 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential boreal toad habitat. Cumulative Alternative 2 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied, breeding habitat on the portion of the pond that occurs on NFS land, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Leopard Frog

Alternative 2 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential northern leopard frog habitat. Cumulative Alternative 2 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied breeding habitat on the portion of the pond that occurs on NFS land, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Goshawk

Alternative 2 would result in insignificant and discountable adverse direct (up to 1.44 acres) and indirect effects to potential goshawk foraging and travel habitats as a result of utility corridor and road construction through mature spruce stands and a clearcut on NFS land. Cumulative effects

associated with private land development would be the same as those described under Alternative 1. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Harrier

Alternative 2 would result in insignificant and discountable adverse direct (0.51 acre) and indirect effects to potential harrier foraging on NFS land as a result of the 0.51 acres of clearcut habitat lost to the access road on NFS land. Cumulative effects associated with private land development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland, mountain grassland, and clearcut habitats. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Peregrine Falcon

Alternative 2 would result in insignificant and discountable adverse direct and indirect effects to potential peregrine falcon foraging as a result of the 0.51 acres of clearcut habitat lost to the access road on NFS land. Cumulative effects associated with private land development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland, mountain grassland, and clearcut habitats. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Owl

Alternative 2 would result in insignificant and discountable adverse direct (up to 1.44 acre) and indirect effects to potential boreal owl foraging and nesting habitats as a result of utility corridor and road construction through mature spruce stands and a clearcut on NFS land. Cumulative effects associated with private land development would be the same as those described under Alternative 1. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Three-toed Woodpecker

Alternative 2 would result in insignificant and discountable adverse direct (up to 0.93 acre) and indirect effects to occupied three-toed woodpecker foraging and nesting habitats as a result of utility corridor construction through mature spruce stands on NFS land. Cumulative effects associated with private land development would be the same as those described under Alternative 1. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Olive-sided Flycatcher

Alternative 2 would result in insignificant and discountable adverse direct (up to 1.44 acres) and indirect effects to occupied olive-sided flycatcher foraging and nesting habitats as a result of utility corridor and road construction through mature spruce stands and a clearcut on NFS land. Cumulative effects associated with private land development would be the same as those described under Alternative 1. As such, Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Marten

Alternative 2 would result in insignificant and discountable adverse direct (up to 1.44 acres) and indirect effects to potential marten foraging and travel habitats as a result of utility corridor and road construction through mature spruce stands and a clearcut on NFS land. Cumulative effects associated with private land development would be the same as those described under Alternative 1. Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

North American Wolverine

Alternative 2 would result in insignificant and discountable adverse direct (up to 1.44 acres) and indirect effects to several acres of potential wolverine foraging and travel habitats as a result of utility corridor and road construction through mature spruce stands and a clearcut on NFS land. Cumulative effects associated with private land development would be the same as those described under Alternative 1. Alternative 2 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

4.5.4.4 *Threatened, Endangered, and Candidate Animal Species*

In summary, Alternative 2 is “likely to adversely affect” the Canada lynx and its habitat. The Proposed Action would have “no effect” on any other listed or proposed species, or designated critical habitat. Individual accounts of potential Alternative 2 impacts to those listed species considered in this document and carried forward are provided below.

Canada Lynx

Trout-Handkerchief Lynx Analysis Unit

Table 4.5-3 indicates that Alternative 2 would result in modifications to 1.65 acres of habitats on NFS land (see Table 4.4-1 for a breakdown of HSSs affected). Road and utility corridor development would affect 0.72 acre of “unsuitable” lynx habitat and convert 0.93 acre of “winter foraging habitat” into “unsuitable” habitat.

Cumulative effects of Village at Wolf Creek development on lynx are presented in Appendix A.2.5. Table A.2.5-1 indicates that Village at Wolf Creek development would convert 140 acres

of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat in the THLAU are shown in Table 4.5-4 by acres and as a percentage of total lynx habitat in the THLAU. Table 4.5-5 shows acreages and percentages of lynx habitats in the THLAU considering direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat resulting from implementation of Alternatives 1-4. Resulting lynx habitat acreages under all alternatives would continue to meet quantitative habitat percentages required by the LCAS (Ruediger et al. 2000).

Alternative 2 Consistency with the Canada Lynx Conservation Assessment and Strategy

A consistency analysis, comparing Alternatives 1-4 with the LCAS, has been completed and is contained in the project’s administrative record on file at the Supervisor’s Office. Alternative 2 would be consistent with all applicable conservation measures in the LCAS (Ruediger et al. 2000), with the following exceptions addressed below.

Conservation measures that might be developed to minimize LCAS conflicts will be developed through USFWS consultation. As agreed to in the Canada Lynx Conservation Agreement (USFS and USFWS 2000), USFS projects proposed by a third party that result in a “likely to adversely affect” determination may be brought forward into formal section 7 consultation.

Landscape Connectivity and Lynx Movements

As described above in the preceding section, direct, indirect, and reasonably certain effects associated with Alternative 2 would impair local and landscape-level habitat connectivity, within and between LAUs that are within the designated Wolf Creek Pass Landscape Linkage.

Conservation Measures Applicable to All Programs and Activities
Project Planning-Standards
3. Maintain habitat connectivity within and between LAUs. <i>Alternative 2 would not be fully consistent with this objective as a result of the USFS authorizing an action whose indirect and cumulative effects would impair lynx habitat connectivity within and between LAUs within the designated Wolf Creek Pass Landscape Linkage. Vehicle use of the extended Tranquility Road, allowing year-round use by up to several thousands of vehicles per day, albeit at low speeds, would restrict and displace potential north-south lynx movements through the area (such as the March 1, 2001 fresh lynx trail that was detected during winter tracking surveys moving north-northeast off the developed portion of WCSA, east of the base area facilities, and through the northwest corner of the private parcel toward the Highway 160 snow shed).</i> <i>Habitat connectivity on NFS lands adjacent to the highway (i.e., approach and departure areas), within the THLAU and between adjacent LAUs in the San Juan core area, would also be appreciably impaired by highway avoidance resulting from significant increases in vehicular highway use attributable to reasonably certain Village at Wolf Creek development. Habitat connectivity would be additionally impaired by likely increases in lynx highway mortality in this important landscape linkage directly attributable to significant increases in vehicular highway use associated with Village at Wolf Creek.</i>

<p>Conservation Measures Applicable to All Programs and Activities (continued)</p>
<p>Conservation Measures to Address Risk Factors Affecting Lynx Productivity D. Forest/Backcountry Roads and Trails Programmatic planning - guidelines.</p>
<p>3. Locate trails and roads away from forested stringers. <i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Alternative 2 would not be fully consistent with this guideline as a result of the USFS authorizing appreciably increased, year-round vehicular use along the existing and extended Tranquility Road, contiguous to the south of a forest stringer, along with utility corridor encroachment into the forest stringer, for access to the private Village at Wolf Creek parcel. This forest stringer, located between the Ski Area's base area and Highway 160, could be important for conducting lynx movements between these developments and over Wolf Creek Pass, particularly in an east to west orientation. Furthermore, any tall retaining walls constructed along the road's extension would block north-south movements across it.</i></p>
<p>Conservation Measures to Address Risk Factors Affecting Lynx Productivity E. Highways Programmatic planning - objectives.</p>
<p>1. Reduce the potential for lynx mortality related to highways. <i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Alternative 2 would not be fully consistent with this objective as a result of the USFS authorizing an action that would facilitate reasonably certain Village at Wolf Creek effects that would likely increase the probability of lynx mortality on Highway 160, within the designated Wolf Creek Pass Landscape Linkage. Under this alternative, private Village at Wolf Creek development would appreciably increase year-round vehicular traffic on Highway 160 through the linkage and, therefore, increase the lynx road-kill potential.</i></p>
<p>Conservation Measures to Address Risk Factors Affecting Lynx Productivity E. Highways Programmatic planning - guidelines.</p>
<p>1. Where needed, develop measures such as wildlife fencing and associated underpasses or overpasses to reduce mortality risk. <i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Cumulative effects of private Village at Wolf Creek development under Alternative 2 would increase the probability of lynx road-kills on Highway 160. Highway crossing structures and fencing that would reduce highway mortality and increase habitat connectivity are under initial study, along with optimal locations for these structures throughout the Wolf Creek Pass Landscape Linkage. The need and commitment to install such structures will likely be part of Section 7 consultation, but will not be part of this NEPA process. Until such commitments are made and finalized, this alternative would not be consistent with this measure.</i></p>
<p>Conservation Measures to Address Movement and Dispersal Programmatic planning - objectives.</p>
<p>1. Maintain and, where necessary and feasible, restore habitat connectivity across forested landscapes. <i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. For the reasons described above, Alternative 2 would not be fully consistent with this objective as a result of the USFS authorizing an action whose indirect and cumulative effects would impair, not maintain, lynx habitat connectivity within and between LAUs within the designated Wolf Creek Pass Landscape Linkage. Vehicle use of the extended Tranquility Road (which could include tall retaining walls functioning as movement barriers) allowing year-round use by up to several thousand vehicles per day, albeit at low speeds, would restrict and displace potential north-south lynx movements through the area. Of greater significance, reasonably certain Village at Wolf Creek development would appreciably increase year-round vehicular traffic on Highway 160, increasing the lynx road-kill probabilities and degrading habitat connectivity as a result of highway mortality and highway avoidance.</i></p>

Conservation Measures Applicable to All Programs and Activities (continued)
<i>Conservation Measures to Address Movement and Dispersal</i>
Programmatic planning - guidelines.
1. Where feasible, maintain or enhance native plant communities and patterns, and habitat for potential lynx prey, within identified key linkage areas. Pursue opportunities for cooperative management with other landowners.
<i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Alternative 2 would not be fully consistent with this guideline as a result of the USFS authorizing an action that would insignificantly and discountably degrade native plant communities and patterns, and habitat for potential lynx prey, within an identified key linkage area. However, as part of the NEPA and ESA processes, the USFS is amenable to cooperative management with Leavell-McCombs JV that would minimize adverse private land effects on surrounding NFS lands.</i>
<i>Conservation Measures to Address Movement and Dispersal</i>
A. Highways
Programmatic planning - objectives.
1. Ensure that connectivity is maintained across highway rights-of-way.
<i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Alternative 2 would not be fully consistent with this guideline because by the USFS authorizing an action that would facilitate reasonably certain Village at Wolf Creek effects (significant increases in vehicular highway use) that would increase lynx highway mortality probabilities and otherwise impair habitat connectivity of lynx across Highway 160 in the designated Wolf Creek Pass Landscape Linkage, it would not ensure maintenance of habitat connectivity. The need and commitment to ensure connectivity across highway rights-of-way will likely be part of Section 7 consultation, but will not be part of this NEPA process.</i>
<i>Conservation Measures to Address Movement and Dispersal</i>
A. Highways
Project planning - guidelines.
1. Dirt and gravel roads traversing lynx habitat (particularly those that could become highways) should not be paved or otherwise upgraded (e.g., straightening of curves, widening of roadway, etc.) in a manner that is likely to lead to significant increases in traffic volumes, traffic speeds, increased width of the cleared ROW, or would foreseeably contribute to development or increases in human activity in lynx habitat. Such projects may increase habitat perforation, create a barrier to movements, increase mortality risks due to vehicle collisions, and generate secondary adverse effects by inducing, facilitating, or exacerbating development and human activity in lynx habitat. Whenever rural dirt and gravel roads traversing lynx habitat are proposed for such upgrades, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.
<i>Alternative 2 would not be fully consistent with this guideline. USFS approval of Alternative 2 would extend the road to the private parcel, leading to (1) year-round vehicular use of the road, (2) significant increases in traffic volumes on this road, (3) increased width of the cleared ROW for the road and/or utilities, and (4) possible increased barrier effects associated with tall retaining walls along the extended portion of this road. Furthermore, this alternative would increase habitat perforation, impair habitat connectivity, increase mortality risks due to vehicle collisions, and generate adverse secondary effects by inducing, facilitating, or exacerbating development (e.g., additional ski lift connections to the private parcel) and human activity in lynx habitat on NFS lands. This analysis and the BA constitute the analysis on potential direct and indirect effects to lynx and lynx habitat.”</i>

Note: The LCAS conservation measure is shown in bold; analysis of the measure is shown in italics.

Alternative 2 Lynx Determination

While there would be direct and indirect to lynx and their habitat from the Federal action, it is the reasonably certain cumulative effects (private Village at Wolf Creek development) that would significantly impair lynx habitat connectivity and increase the risk of “take” of individual lynx from vehicular collision, so that Alternative 2 would be “likely to adversely affect” the Canada lynx. Alternative 2 would directly convert 0.93 acres of “winter foraging habitat” to

inconsistent with several LCAS (Ruediger et al. 2000) conservation measures. In addition, reasonably certain Village at Wolf Creek development effects could be substantial. Village at Wolf Creek development could convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Significant increases in vehicular traffic generated by WCV would appreciably impair habitat connectivity along the length of Highway 160 through the designated Wolf Creek Pass Landscape Linkage. This linkage is vital to habitat connectivity in the Southern Rockies Ecosystem and to the recovery of a viable lynx population in Colorado. Increased volumes of high-speed Highway 160 traffic would increase the probability of lynx road-kill to a level resulting in “incidental take” resulting solely from, and directly attributable to, the Village at Wolf Creek development. The present combination of direct, indirect, and reasonably certain effects could profoundly modify and degrade current lynx habitat connectivity, availability, effectiveness within the San Juan core area and the Wolf Creek Pass Landscape Linkage, further impair the ability of lynx to maintain a home range encompassing the project area, and appreciably increase the likelihood of death or injury to lynx as a result of highway mortality and by meaningfully impairing behavioral patterns such as denning, foraging, and travel.

Alternative 2 is currently inconsistent with eight LCAS measures developed to conserve lynx on Federal lands. While conservation measures to minimize Alternative 2 conflicts with the LCAS might be formulated through the Section 7 consultation process, that process has not yet started, and any such measures are not currently part of Alternative 2.

4.5.5 Alternative 3 - Snow Shed-East Village Alternative

4.5.5.1 General Fish and Wildlife

Alternative 3 effects on the animal community are virtually the same as Alternative 2, because: (1) direct and indirect effects on NFS land are virtually identical in type and scale, (2) Village at Wolf Creek development of the private parcel is assumed to be identical under Alternatives 1-4 and, (3) it would be the cumulative impacts associated with Village at Wolf Creek development that would have the profound, irreversible ecological effects summarized above under Alternatives 1 and 2. In addition to Alternative 1 effects, Alternative 3 would affect 2.98 acres of habitat on NFS land (Table 4.4-1), including 2.58 acres of vegetated habitats and 0.4 acres of previously developed habitats. Alternative 3 (2.58 acres) would affect slightly more native habitat on NFS lands than Alternative 2 (1.44 acres). More importantly, however, Alternative 3 would involve a roadway crossing East Fork Pass Creek in a currently undisturbed area that would result a greater loss of habitat effectiveness (than Alternative 2) and would likely result in greater impacts to wetland habitats on the private parcel.

4.5.5.2 Management Indicator Species

In summary, the Alternative 3 would directly impact 2.98 acres of terrestrial habitat and local stream reaches occupied by MIS. Effects to occupied and/or potential habitats would occur as a result of habitat modifications to NFS lands and cumulative effects on private lands extending onto the surrounding National Forest where habitat effectiveness would be reduced. As a result of cumulative effects associated with Village at Wolf Creek development, Alternative 3 may impact individual brown creeper, hermit thrush, Lincoln’s sparrow, Wilson’s warbler, elk, mule deer, Rio

Grande cutthroat trout, and brook trout, but is not likely to significantly affect population or habitat trends on the Forest. The area affected by the Alternative 3 on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the Forest. Alternative 3 would have no discernable effect on the reproductive potential of these species and would not likely result in a loss of species viability on the Forest.

Brown Creeper

Alternative 3 would directly impact 2.58 acres of occupied (HSS 4B spruce-fir) brown creeper habitat on the RGNF. Based on the acres of HSS 4B spruce-fir in the areas that would be directly affected by Alternative 3 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/5 acres; Gillihan 2002), and on full occupancy of available habitat, Alternative 3 would affect up to 0.5 brown creeper pairs/territories. Alternative 3 would directly affect up to 0.0004 percent of the available habitat and creeper population thought to be present on the RGNF. Realistically, up to several pairs/territories of creepers could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 3 effects of Village at Wolf Creek development on brown creeper habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1. Direct, indirect, and cumulative Alternative 3 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Brown creepers would remain relatively abundant and widely distributed across the Forest. Considering direct, indirect, and cumulative Alternative 3 effects under all Forest Plan budget levels, the quality and quantity of creeper habitat would remain above historic averages during the life of the Forest Plan and creeper populations would remain above the average relative density that may have occurred under the natural disturbance regime. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of brown creepers and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure that their continued existence is well distributed across the RGNF.

Hermit Thrush

Alternative 3 would directly impact 2.58 acres of occupied (HSS 4B spruce-fir) hermit thrush habitat on the RGNF. Based on the acres of HSS 4B spruce-fir in the areas that would be directly affected by Alternative 3 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/10 acres; Gillihan 2002), and on full occupancy of available habitat, Alternative 3 would affect up to 0.3 hermit thrush pairs/territories. Alternative 3 would directly affect up to 0.0004 percent of the available habitat and hermit thrush population thought to be present on the RGNF. Realistically, up to several pairs/territories of thrushes could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 3 effects of Village at Wolf Creek development on hermit thrush habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1.

Direct, indirect, and cumulative Alternative 3 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Hermit thrushes would remain relatively abundant and widely distributed across the Forest. Considering direct, indirect, and cumulative Alternative 2 effects under all Forest Plan budget levels, the quality and quantity of hermit thrush habitat would remain above historic averages during the life of the Forest Plan and hermit thrush populations would remain above the average relative density that may have occurred under the natural disturbance regime. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of hermit thrushes and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Lincoln's Sparrow

While Alternative 3 proposes no habitat modifications to montane or subalpine willow carrs representing occupied or potential habitat for this species on the RGNF, Snow Shed-East Village road construction through a forested wetland has the potential to disrupt hydrologic connectivity that supports an adjacent willow stand that is inhabited by this species. As a result, project design criteria have been incorporated into this alternative to ensure the persistence of willows. As such, it is unlikely that Alternative 3 would directly or indirectly affect any Lincoln's sparrow habitat, or any portion of the RGNF population.

Village at Wolf Creek development that would occur under Alternative 3 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives or applicable Forest Plan objectives, standards, and guidelines, which are considered on NFS lands only.

Direct, indirect, and cumulative Alternative 3 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Lincoln's sparrows would remain relatively abundant and widely distributed across the Forest. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Lincoln's sparrows and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Wilson's Warbler

While Alternative 3 proposes no habitat modifications to montane or subalpine willow carrs representing occupied or potential habitat for this species on the RGNF, Snow Shed-East Village road construction through a forested wetland has the potential to disrupt hydrologic connectivity

that supports an adjacent willow stand that is inhabited by this species. As a result, project design criteria have been incorporated into this alternative to ensure the persistence of willows. As such, it is unlikely that Alternative 3 would, directly or indirectly affect any Wilson's warbler habitat, or any portion of the RGNF population.

Village at Wolf Creek development that would occur under Alternative 3 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives or applicable Forest Plan objectives, standards, and guidelines, which are considered only on NFS lands.

Direct, indirect, and cumulative Alternative 3 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Wilson's warblers would remain relatively abundant and widely distributed across the Forest. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Wilson's warblers and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Rocky Mountain Elk

Alternative 3 would directly impact 2.58 acres of occupied summer elk range on the RGNF. Alternative 3 indirect effects would be identical to those described above under Alternative 2. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Elk would remain relatively abundant and widely distributed across the Forest.

Village at Wolf Creek development and associated seasonal activities that would occur under Alternatives 1-4 would completely displace all seasonal elk use from the private parcel and reduce elk habitat effectiveness in a considerable area of surrounding NFS lands. Reduced habitat effectiveness would affect an area far greater than the private parcel. Alternative 3 indirect effects would be identical to those described above under Alternative 1.

While direct, indirect, and cumulative effects of Alternative 3 would be appreciable and far-ranging, they would be unlikely to measurably affect the population, trend, or distribution of elk across the RGNF for the reasons described above under Alternative 1. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable elk populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Mule Deer

Alternative 3 would directly impact 2.58 acres of occupied summer mule deer habitat on the RGNF. Indirect effects associated with use road use across NFS lands would include the same displacement and reduced habitat effectiveness described above for elk under Alternative 2, but

would probably not result in the complete avoidance of the habitat patch that would be surrounded by roads and the Village at Wolf Creek development. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Deer would remain relatively abundant and widely distributed across the Forest.

Village at Wolf Creek development and associated seasonal activities that would occur under Alternatives 1-4 would completely displace all seasonal deer use from the private parcel and reduce deer habitat effectiveness in a considerable area of surrounding NFS lands, though not as large of an area as that reduced for elk. Reduced habitat effectiveness would affect an area far greater than the private parcel.

While direct, indirect, and cumulative effects of Alternative 3 would be appreciable and far ranging, they would be unlikely to measurably affect the population, trend, or habitat distribution of mule deer across the RGNF for the reasons described above under Alternative 1. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable deer populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Rio Grande Cutthroat Trout

Alternative 3 would have insignificant sedimentation effects on this species as a result of avoided and minimized (via implementation of project design criteria consistent with Forest Plan standards and guidelines) sedimentation effects associated with construction of the Snow Shed - East Village access road. Alternative 3 effects would result in no direct or indirect changes to the population, trend, or distribution of occupied and potential habitats of this species on the RGNF. Rio Grande Cutthroat Trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 3 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 3 to would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 3 effects would be insignificant on this species' Forest-wide population, distribution, and trend. Rio Grande Cutthroat Trout would remain uncommon, but well distributed across the Forest. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable Rio Grande Cutthroat Trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Brook Trout

Alternative 3 would have insignificant sedimentation effects on this species as a result of avoided and minimized (via development of project design criteria) sedimentation effects associated with

construction of the Snow Shed - East Village access road. Alternative 3 effects would result in no direct or indirect changes to the population, trend, or distribution of occupied and potential habitats of this species on the RGNF. Brook trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 3 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 3 would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 3 effects would be insignificant on this species' Forest-wide population, habitat distribution, and trend. Brook trout would remain abundant and widely distributed across the Forest. Alternative 3 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable brook trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

4.5.5.3 *Region 2 Sensitive Animal Species*

In summary, Alternative 3 may impact individual Rio Grande cutthroat trout, boreal toads, northern leopard frogs, northern goshawks, northern harriers, peregrine falcons, boreal owls, three toed woodpeckers, olive-sided flycatchers, American marten, and North American wolverine, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide (Table 4.5-1). Effects to occupied and/or potential habitats would occur as a result of 2.58 acres of native habitat conversion on NFS lands and cumulative effects on private lands extending onto surrounding NFS land where habitat effectiveness would be reduced. For the above species that are not present on disturbance areas at the time of construction, reduced potential habitat availability should have no discernable effect on local population viability. For those species even occasionally present in disturbance areas, the additional habitat perforation, increased edge effects, reduced block size, reduced habitat connectivity, reduced forage/prey availability, increased human disturbance, and/or other ecological effects may displace individuals from impact areas and adjacent zones of influence and reduce local habitat effectiveness. For species with larger home ranges, project effects may influence foraging, breeding, and/or travel use of habitats beyond the project area. The area affected by the Alternative 3 contains an insignificant proportion of the total population and potential range of each of the above species on the Planning Area. Alternative 3 would have no discernable effect on the reproductive potential of these species. Alternative 3 would have no impact on any other R2 animal species on the RGNF, as they have no habitat within the project area.

Rio Grande Cutthroat Trout

Alternative 3 would have insignificant sedimentation effects on this species as a result of minimized (via implementation of project design criteria) sedimentation effects associated with construction of the Snow Shed - East Village access road. Effects extending onto the Forest

from the Village at Wolf Creek development could also affect this species. Likely cumulative effects to NFS lands include water quality and aquatic habitat degradation resulting from unintended toxic discharges/runoff (e.g., from roads and other impermeable surfaces, snow storage, pet waste, chemical spills, equestrian facilities, wastewater effluent, septic systems, etc.) into occupied habitat in West Fork Pass Creek and Alberta Reservoir, and unoccupied, but potential habitat in East Fork Pass Creek. Pollutants affecting aquatic and riparian vegetation could extend further off-site, with effects becoming diluted with increasing distance and water volume. Proposed winter water diversions and transbasin water contributions could adversely affect streamflows, eliminate overwintering habitat, and lead to more concentrated effluent discharge effects (i.e., reduced dilution). Effects of degraded riparian zones and aquatic habitat quality resulting from the Snow Shed - East Village access road crossing of East Fork Pass Creek, service development (i.e., sewage lines proposed through riparian corridors), service use, and dispersed recreation (e.g., volunteer trails), would largely be confined to the private parcel, although sedimentation and other effects could extend downstream. Greater fishing pressure at Alberta Park Reservoir would likely result in greater mortality of Rio Grande Cutthroat Trout as a result of injured fish and those taken illegally, however, because this population is frequently monitored and maintained by CDOW stocking, management could be adjusted to maintain this population. Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Western Toad

Alternative 3 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential boreal toad habitat. Cumulative Alternative 3 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied, breeding habitat on the portion of the pond that occurs on NFS land, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Leopard Frog

Alternative 3 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential northern leopard frog habitat. Cumulative Alternative 3 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied, breeding habitat on the portion of the pond that occurs on NFS land, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Goshawk

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to potential goshawk foraging and travel habitats as a result of road and utility corridor construction through a mature spruce stand on NFS land. Cumulative effects associated

with the private land development would be the same as those described under Alternative 1. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Harrier

Alternative 3 would result in insignificant and discountable adverse direct and indirect effects to potential harrier foraging habitat as a result of the access road extending adjacent to a small meadow containing a willow stand and mountain grassland on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland and mountain grassland habitats. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Peregrine Falcon

Alternative 3 would indirectly result in insignificant and discountable, adverse, displacement and reduced habitat effectiveness effects to potential peregrine falcon foraging habitat as a result of the access road extending adjacent to a small meadow containing a willow stand and mountain grassland on NFS land. Cumulative effects associated with the private land development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland and mountain grassland habitats. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Owl

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to potential boreal owl foraging habitat as a result of road and utility corridor construction through a mature spruce stand on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Three-toed Woodpecker

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to occupied three-toed woodpecker foraging habitat as a result of road and utility corridor construction through a mature spruce stand on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Olive-sided Flycatcher

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to occupied olive-sided flycatcher foraging habitat as a result of road and utility corridor construction through mature spruce stands on NFS land. Compared to Alternative 2, Alternative 3 would affect a slightly smaller area of lower quality habitat as a result of lower snag density in the younger spruce-fir stand. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Marten

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to potential marten foraging and travel habitats as a result of road and utility corridor construction through a mature spruce stand on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

North American Wolverine

Alternative 3 would result in insignificant and discountable adverse direct (up to 2.58 acres) and indirect effects to several acres of potential wolverine foraging and travel habitats as a result of road and utility corridor construction through a mature spruce stand on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. Alternative 3 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

4.5.5.4 *Threatened, Endangered, and Candidate Animal Species*

In summary, Alternative 3 is “likely to adversely affect” the Canada lynx and its habitat. Alternative 3 would have “no effect” on any other listed or proposed species, or designated critical habitat. Individual accounts of potential Alternative 3 impacts to those listed species considered in this document and carried forward are provided below.

Canada Lynx

Trout-Handkerchief Lynx Analysis Unit

Table 4.5-3 indicates that Alternative 3 would result in modifications to 2.98 acres of habitats on NFS land (see Table 4.4-1, above, for a breakdown of HSSs affected). Road and utility corridor development would affect 0.4 acres of “unsuitable” lynx habitat and convert 2.58 acres of “winter foraging habitat” into “unsuitable” habitat.

Cumulative effects of Village at Wolf Creek development on lynx are presented in Appendix A.2.5. Table A.2.5-1 indicates that Village at Wolf Creek development would convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat in the THLAU are shown in Table 4.5-4 by acres and as a percentage of total lynx habitat in the THLAU. Table 4.5-5 shows acreages and percentages of lynx habitats in the THLAU considering direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat resulting from implementation of Alternatives 1-4. Resulting lynx habitat acreages under all alternatives would continue to meet quantitative habitat percentages required by the LCAS (Ruediger et al. 2000).

Alternative 3 Consistency with the Canada Lynx Conservation Assessment and Strategy

A consistency analysis, comparing Alternatives 1-4 with the LCAS, has been completed and is contained in the project’s administrative record on file at the Supervisor’s Office. Alternative 3 would be consistent with all applicable conservation measures in the LCAS (Ruediger et al. 2000), except for the eight measures presented above under Alternative 2 (i.e., inconsistency for similar reasons not warranting additional discussion), and one additional measure discussed below. Conservation measures that might be developed to minimize LCAS conflicts will be developed through USFWS consultation.

Conservation Measures
<i>Conservation Measures to Address Risk Factors Affecting Lynx Productivity</i>
D. Forest/Backcountry Roads and Trails
Programmatic planning - guidelines.
5. Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.
<i>While programmatic measures do not generally apply to project level analyses, it is at the project level that decisions can be made to better meet programmatic objectives. Alternative 3 would not be fully consistent with the intent of this guideline. That stringer could be important for maintaining habitat connectivity between these developments and over Wolf Creek Pass, particularly in an east to west orientation. With development of the private Village at Wolf Creek parcel, this stringer would likely become even more important for conducting east-west movements, because it is the western extension of a narrow, mostly continuous forest swath that would remain between the private development and Highway 160. Access road fill slopes and use of the access road across this stringer could force lynx onto Highway 160, where they would be susceptible to highway mortality. The specific alignment of this access road was crossed by at least one lynx (on March 1, 2001).</i>

Note: The LCAS conservation measure is shown in bold; analysis of the measure is shown in italics.

Landscape Connectivity and Lynx Movements

As described above in the preceding section, direct, indirect, and reasonably certain effects associated with Alternative 3 would impair local and landscape-level habitat connectivity, within and between LAUs that are within the designated Wolf Creek Pass Landscape Linkage.

Alternative 3 Lynx Determination

While there would be direct and indirect impacts to lynx and their habitat from the Federal action, it is the reasonably certain cumulative effects (private Village at Wolf Creek development) that would significantly impair lynx habitat connectivity and increase the risk of “take” of individual lynx from vehicular collision, so that Alternative 3 would be “likely to

adversely affect” the Canada lynx. Alternative 3 would directly convert 2.58 acres of “winter foraging habitat” to “unsuitable habitat” on NFS land. Other direct and indirect Alternative 3 effects would be inconsistent with several LCAS (Ruediger et al. 2000) conservation measures. While conservation measures to minimize Alternative 3 conflicts with the LCAS might be formulated through the Section 7 consultation process, that process has not yet started, and any such measures are not currently part of Alternative 3. In addition, reasonably certain Village at Wolf Creek development effects would be substantial. Village at Wolf Creek development would convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Significant increases in vehicular traffic generated by the Village at Wolf Creek would appreciably impair habitat connectivity along the length of Highway 160 through the designated Wolf Creek Pass Landscape Linkage. This linkage is vital to habitat connectivity in the Southern Rockies Ecosystem and to the recovery of a viable lynx population in Colorado. Increased volumes of high-speed Highway 160 traffic would increase the probability of lynx road-kill to a level resulting in “incidental take” resulting solely from, and directly attributable to, the Village at Wolf Creek development. The present combination of direct, indirect, and reasonably certain effects would profoundly modify and degrade current lynx habitat connectivity, availability, effectiveness within the San Juan core area and the designated landscape linkage, further impair the ability of lynx to maintain a home range encompassing the project area, and appreciably increase the likelihood of death or injury to lynx as a result of highway mortality and by meaningfully impairing behavioral patterns such as denning, foraging, and travel. Alternative 3 is currently inconsistent with nine LCAS measures developed to conserve lynx on Federal lands.

4.5.6 Alternative 4 – Dual Access Road Alternative

4.5.6.1 *General Fish and Wildlife*

Alternative 4 effects on the animal community would be virtually the same as Alternatives 2 and 3, because Village at Wolf Creek development of the private parcel is assumed to be identical under Alternatives 1-4 and it would be the cumulative impacts associated with Village at Wolf Creek development that would result in the profound, irreversible ecological effects summarized above under Alternative 1. In addition to Alternative 1 effects, Alternative 4 would affect 3.02 acres of habitat on NFS land (Table 4.4-1), including 2.81 acres of vegetated habitats and 0.21 acres of previously developed habitats. Alternative 4 would affect the largest acreage of vegetated habitats on NFS lands compared to Alternatives 2 (1.44 acres) and 3 (2.58 acres). Alternative 4 would involve two roads and utility corridors crossing East Fork Pass Creek’s tributaries, but not its mainstem, the greatest loss of habitat effectiveness, and likely impacts to wetland habitats on the private parcel exceeding those of Alternatives 2 and 3.

4.5.6.2 *Management Indicator Species*

In summary, the Alternative 4 would directly impact 3.02 acres of terrestrial habitat and local stream reaches occupied by MIS. Effects to occupied and/or potential habitats would occur as a result of habitat modifications to NFS lands and cumulative effects on private lands extending onto the surrounding National Forest where habitat effectiveness would be reduced. As a result of cumulative effects associated with WCV development, Alternative 4 may impact individual brown creeper, hermit thrush, Lincoln’s sparrow, Wilson’s warbler, elk, mule deer, Rio Grande cutthroat

trout, and brook trout, but is not likely to significantly affect population or habitat trends on the Forest. The area affected by the Alternative 4 on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the Forest. Alternative 4 would have no discernable effect on the reproductive potential of these species and would not likely result in a loss of species viability on the Forest.

Brown Creeper

Alternative 4 would directly impact 2.3 acres of occupied (HSS 4B and 4C spruce-fir) brown creeper habitat on the RGNF. Based on the acres of suitable habitat in areas that would be directly and indirectly affected by Alternative 4 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/5 acres; Gillihan 2002), and on full occupancy of available habitat, Alternative 4 would affect up to 0.5 brown creeper pairs/territories. Alternative 4 would directly affect up to 0.0004 percent of the available habitat and creeper population thought to be present on the RGNF. Realistically, up to several pairs/territories of creepers could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 4 effects of Village at Wolf Creek development on brown creeper habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Brown creepers would remain relatively abundant and widely distributed across the Forest. Considering direct, indirect, and cumulative Alternative 4 effects under all Forest Plan budget levels, the quality and quantity of creeper habitat would remain above historic averages during the life of the Forest Plan and creeper populations would remain above the average relative density that may have occurred under the natural disturbance regime. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of brown creepers and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Hermit Thrush

Alternative 4 would directly impact 2.3 acres of occupied (HSS 4B and 4C spruce-fir) hermit thrush habitat on the RGNF. Based on the acres of suitable habitat in areas that would be directly and indirectly affected by Alternative 4 road ROWs and utility corridors on NFS lands (see Table 4.4-1, above), on the mean territory size of this species on the Forest (1 pair/10 acres; Gillihan 2002), and on full occupancy of available habitat, Alternative 4 would affect up to 0.2 hermit thrush pairs/territories. Alternative 4 would directly affect up to 0.0004 percent of the available habitat and hermit thrush population thought to be present on the RGNF. Realistically, up to several pairs/territories of thrushes could be affected by the linear corridors extending through occupied and potential habitat, as well as by edge, perforation, and disturbance effects.

Cumulative Alternative 4 effects of Village at Wolf Creek development on hermit thrush habitat on private and contiguous NFS lands would be the same as those described above under Alternative 1.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Hermit thrushes would remain relatively abundant and widely distributed across the Forest. Considering direct, indirect, and cumulative Alternative 4 effects under all Forest Plan budget levels, the quality and quantity of hermit thrush habitat would remain above historic averages during the life of the Forest Plan and hermit thrush populations would remain above the average relative density that may have occurred under the natural disturbance regime. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of hermit thrushes and other species associated with mature and late-successional conifer habitats with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Lincoln's Sparrow

Alternative 4 would have no direct or indirect impacts on this species because no habitat modifications to montane or subalpine willow carrs representing occupied or potential habitat for this species would likely occur on the RGNF. Project design criteria have been incorporated into this alternative to ensure that Snow Shed-East Village road construction would not disrupt hydrologic connectivity that may support down-gradient willow stands that are inhabited by this species. As such, it is unlikely that Alternative 4 would directly or indirectly affect any Lincoln's sparrow habitat, or any portion of the RGNF population.

Village at Wolf Creek development that would occur under Alternative 4 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives or applicable Forest Plan objectives, standards, and guidelines, which are considered on NFS lands only.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Lincoln's sparrows would remain relatively abundant and widely distributed across the Forest. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Lincoln's sparrows and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Wilson's Warbler

Alternative 4 would have no direct or indirect impacts on this species because no habitat modifications to montane and subalpine willow carrs representing occupied or potential habitat for this species would occur on the RGNF. Project design criteria have been incorporated into

this alternative to ensure that Snow Shed-East Village road construction would not disrupt hydrologic connectivity that may support down-gradient willow stands that are inhabited by this species. As such, it is unlikely that Alternative 4 would directly or indirectly affect any Wilson's warbler habitat, or any portion of the RGNF population.

Village at Wolf Creek development that would occur under Alternative 4 would likely have little affect on willows inhabited by this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the Clean Water Act. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. This effect on private land has no bearing on NFMA directives or applicable Forest Plan objectives, standards, and guidelines, which are considered only on NFS lands.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant and discountable on this species' Forest-wide population, habitat distribution, and trend. Wilson's warblers would remain relatively abundant and widely distributed across the Forest. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable populations of Wilson's warblers and other species associated with riparian willow systems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Rocky Mountain Elk

Alternative 4 would directly impact 2.81 acres of occupied summer elk range on the RGNF. Alternative 4 indirect effects would be identical to those described above under Alternative 2. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Elk would remain relatively abundant and widely distributed across the Forest.

Village at Wolf Creek development and associated seasonal activities that would occur under Alternatives 1-4 would completely displace all seasonal elk use from the private parcel and reduce elk habitat effectiveness in a considerable area of surrounding NFS lands. Reduced habitat effectiveness would affect an area far greater than the private parcel. Alternative 4 indirect effects would be identical to those described above under Alternative 1.

While direct, indirect, and cumulative effects of Alternative 4 would be appreciable and far-ranging, they would be unlikely to measurably affect the population, trend, or distribution of elk across the RGNF for the reasons described above under Alternative 1. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable elk populations with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Mule Deer

Alternative 4 would directly impact 2.81 acres of occupied summer mule deer habitat on the RGNF. Indirect effects associated with use road use across NFS lands would include the same displacement and reduced habitat effectiveness described above for elk under Alternative 2, but

would probably not result in the complete avoidance of the habitat patch that would be surrounded by roads and the Village at Wolf Creek development. Direct and indirect effects would have no discernable influence on the population, trend, or seasonal habitats occupied by this species on the RGNF. Deer would remain relatively abundant and widely distributed across the Forest.

Village at Wolf Creek development and associated seasonal activities that would occur under Alternatives 1-4 would completely displace all seasonal deer use from the private parcel and reduce deer habitat effectiveness in a considerable area of surrounding NFS lands, though not as large of an area as that reduced for elk. Reduced habitat effectiveness would affect an area far greater than the private parcel.

While direct, indirect, and cumulative effects of Alternative 4 would be appreciable and far-ranging, they would be unlikely to measurably affect the population, trend, or habitat distribution of mule deer across the RGNF for the reasons described above under Alternative 1. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable deer populations with the estimated numbers and distribution of reproductive individuals to insure that their continued existence is well distributed across the RGNF.

Rio Grande Cutthroat Trout

Alternative 4 would have insignificant sedimentation effects on this species as a result of avoided and minimized (via implementation of project design criteria) sedimentation effects associated with construction of the two access roads. Alternative 4 effects would result in no direct or indirect changes to the population, trend, or distribution of occupied and potential habitats of this species on the RGNF. Rio Grande Cutthroat Trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 4 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 4 would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant on this species' Forest-wide population, distribution, and trend. Rio Grande Cutthroat Trout would remain uncommon, but well distributed across the Forest. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable Rio Grande Cutthroat Trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

Brook Trout

Alternative 4 would have insignificant sedimentation effects on this species as a result of avoided and minimized (via development of project design criteria) sedimentation effects associated with construction of the two access roads. Alternative 4 effects would result in no direct or indirect

changes to the population, trend, or distribution of occupied and potential habitats of this species on the RGNF. Brook trout would remain relatively abundant and widely distributed across the Forest.

Likely Alternative 4 cumulative effects extending from the Village at Wolf Creek development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. Because private Village at Wolf Creek development would be the same under Alternatives 1-4, likely indirect effects resulting from Alternative 4 would be the same as those described above for Alternative 1.

Direct, indirect, and cumulative Alternative 4 effects would be insignificant on this species' Forest-wide population, habitat distribution, and trend. Brook trout would remain abundant and widely distributed across the Forest. Alternative 4 would be consistent with NFMA direction and applicable Forest Plan objectives, standards, guidelines, and the MIS monitoring question for maintaining viable brook trout populations and healthy aquatic ecosystems with the estimated numbers and distribution of reproductive individuals to insure their continued existence is well distributed across the RGNF.

4.5.6.3 *Region 2 Sensitive Animal Species*

In summary, Alternative 4 may impact individual Rio Grande cutthroat trout, boreal toads, northern leopard frogs, northern goshawks, northern harriers, peregrine falcons, boreal owls, three toed woodpeckers, olive-sided flycatchers, American marten, and North American wolverine, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide (Table 4.5-1). Effects to occupied and/or potential habitats would occur as a result of 2.81 acres of native habitat conversion on NFS lands and cumulative effects on private lands extending onto surrounding NFS land where habitat effectiveness would be reduced. For the above species that are not present on disturbance areas at the time of construction, reduced potential habitat availability should have no discernable affect on local population viability. For those species even occasionally present in disturbance areas, the additional habitat perforation, increased edge effects, reduced block size, reduced habitat connectivity, reduced forage/prey availability, increased human disturbance, and/or other ecological effects may displace individuals from impact areas and adjacent zones of influence and reduce local habitat effectiveness. For species with larger home ranges, project effects may influence foraging, breeding, and/or travel use of habitats beyond the project area. The area affected by the Alternative 4 contains an insignificant proportion of the total population and potential range of each of the above species on the Planning Area. Alternative 4 would have no discernable effect on the reproductive potential of these species. Alternative 4 would have no impact on any other R2 animal species on the RGNF, as they have no habitat within the project area.

Rio Grande Cutthroat Trout

Alternative 4 would have insignificant sedimentation effects on this species as a result of minimized (via implementation of project design criteria) sedimentation effects associated with construction of the Tranquility and Snow Shed - East Village access roads and utility corridors. Effects extending onto the Forest from the Village at Wolf Creek development could also affect

this species. Likely cumulative effects to NFS lands include water quality and aquatic habitat degradation resulting from unintended toxic discharges/runoff (e.g., from roads and other impermeable surfaces, snow storage, pet waste, chemical spills, equestrian facilities, wastewater effluent, septic systems, etc.) into occupied habitat in West Fork Pass Creek and Alberta Reservoir, and unoccupied, but potential habitat in East Fork Pass Creek. Pollutants affecting aquatic and riparian vegetation could extend further off-site, with effects becoming diluted with increasing distance and water volume. Proposed winter water diversions and transbasin water contributions could adversely affect streamflows, eliminate overwintering habitat, and lead to more concentrated effluent discharge effects (i.e., reduced dilution). Effects of degraded riparian zones and aquatic habitat quality resulting from the Snow Shed - East Village access road crossing of East Fork Pass Creek, Tranquility Road widening and utilities crossing tributaries of East Fork Pass Creek, service development (i.e., sewage lines proposed through riparian corridors), service use, and dispersed recreation (e.g., volunteer trails), would largely be confined to the private parcel, although sedimentation and other effects could extend downstream. Greater fishing pressure at Alberta Park Reservoir would likely result in greater mortality of Rio Grande Cutthroat Trout as a result of injured fish and those taken illegally, however because this population is frequently monitored and maintained by CDOW stocking, management could be adjusted to maintain this population. Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Western Toad

Alternative 4 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential boreal toad habitat. Cumulative Alternative 4 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied breeding habitat on the portion of the pond that occurs on NFS land, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Leopard Frog

Alternative 4 would have no direct or indirect impacts on this species because no habitat modifications on NFS lands would affect potential northern leopard frog habitat. Cumulative Alternative 4 effects would likely degrade the suitability of the ephemeral pond straddling the private/NFS property line for future breeding as a result of unintended runoff, trampling, amphibian collection, etc. As such, because of likely adverse effects to potential, albeit unoccupied breeding habitat on the portion of the pond that occurs on NFS land, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Goshawk

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to potential goshawk foraging and travel habitats as a result of road and utility

corridor construction through mature spruce stands on NFS land. Alternative 4 would affect the largest area of occupied or potential habitat for this species of any Alternative. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Northern Harrier

Alternative 4 would result in insignificant and discountable adverse direct (up to 0.51 acres) and indirect effects to potential harrier foraging habitat as a result of the access road and utility corridors extending through a clearcut and adjacent to a small meadow containing a willow stand and mountain grassland on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland and mountain grassland habitats. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Peregrine Falcon

Alternative 4 would directly (0.51 acres) and indirectly result in insignificant and discountable habitat loss, and adverse displacement and reduced habitat effectiveness effects to potential peregrine falcon foraging habitat, as a result of the Tranquility Road extending through a clearcut and the Snow Shed-East Village Road extending adjacent to a small meadow containing a willow stand and mountain grassland on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be slightly greater than those described under Alternative 1 because of the access road on the private parcel extending through wetland and mountain grassland habitats. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Boreal Owl

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to potential boreal owl foraging habitat as a result of road and utility corridor construction through mature spruce stands on NFS land. Alternative 4 would affect the largest area of occupied and potential habitat for this species of any Alternative. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Three-toed Woodpecker

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to occupied three-toed woodpecker foraging habitat as a result of road and utility corridor construction through mature spruce stands on NFS land. Alternative 4 would affect the largest area of occupied and potential habitat for this species of any alternative. Cumulative

effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

Olive-sided Flycatcher

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to occupied olive-sided flycatcher foraging habitat as a result of road and utility corridor construction through mature spruce stands and a clearcut on NFS land. Alternative 4 would affect the largest area of occupied and potential habitat for this species of any Alternative. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. As such, Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

American Marten

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to potential marten foraging and travel habitats as a result of road and utility corridor construction through mature spruce stands and clearcut on NFS land. Alternative 4 would affect the largest area of occupied and potential habitat for this species of any Alternative. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

North American Wolverine

Alternative 4 would result in insignificant and discountable adverse direct (up to 2.81 acres) and indirect effects to several acres of potential wolverine foraging and travel habitats as a result of road and utility corridor construction through mature spruce stands and a clear cut on NFS land. Cumulative effects associated with the Village at Wolf Creek development would be the same as those described under Alternative 1. Alternative 4 may impact individuals, but is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability rangewide.

4.5.6.4 *Threatened, Endangered, and Candidate Animal Species*

In summary, Alternative 4 is “likely to adversely affect” the Canada lynx and its habitat. The Proposed Action would have “no effect” on any other listed or proposed species, or designated critical habitat. Individual accounts of potential Alternative 4 impacts to those listed species considered in this document and carried forward are provided below.

Canada Lynx

Trout-Handkerchief Lynx Analysis Unit

Table 4.5-3 indicates that Alternative 4 would result in modifications to 3.02 acres of habitats on NFS land (see Table 4.4-1, above, for a breakdown of HSSs affected). Road and utility corridor development would affect 0.71 acres of “unsuitable” lynx habitat and convert 2.3 acres of “winter foraging habitat” into “unsuitable” habitat.

Cumulative effects of Village at Wolf Creek development on lynx are presented in Appendix A.2.5. Table A.2.5-1 indicates that Village at Wolf Creek development would convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat in the THLAU are shown in Table 4.5-4 by acres and as a percentage of total lynx habitat in the THLAU. Table 4.5-5 shows acreages and percentages of lynx habitats in the THLAU considering direct, indirect, and cumulative (Village at Wolf Creek) habitat modifications to lynx habitat resulting from implementation of Alternatives 1-4. Resulting lynx habitat acreages under all alternatives would continue to meet quantitative habitat percentages required by the LCAS (Ruediger et al. 2000).

Alternative 4 Consistency with the Canada Lynx Conservation Assessment and Strategy

A consistency analysis, comparing Alternatives 1-4 with the LCAS, has been completed and is contained in the project’s administrative record on file at the Supervisor’s Office. Alternative 4 would be consistent with all applicable conservation measures in the LCAS (Ruediger et al. 2000), except for the nine measures presented above under Alternatives 2 and 3.

Conservation measures that might be developed to minimize LCAS conflicts will be developed through USFWS consultation.

Landscape Connectivity and Lynx Movements

As described above under Alternatives 2 and 3, direct, indirect, and reasonably certain effects associated with Alternative 4 would impair local and landscape-level habitat connectivity, within and between LAUs that are within the designated Wolf Creek Pass Landscape Linkage.

Alternative 4 Lynx Determination

While there would be direct and indirect to lynx and their habitat from the Federal action, it is the reasonably certain cumulative effects (private Village at Wolf Creek development) that would significantly impair lynx habitat connectivity and increase the risk of “take” of individual lynx from vehicular collision, so that Alternative 4 would be “likely to adversely affect” the Canada lynx. Alternative 4 would directly convert 2.3 acres of “winter foraging habitat” to “unsuitable habitat” on NFS land. Other direct and indirect Alternative 4 effects would be inconsistent with several LCAS (Ruediger et al. 2000) conservation measures. While conservation measures to minimize Alternative 4 conflicts with the LCAS might be formulated through the Section 7 consultation process, that process has not yet started, and any such measures are not currently part of Alternative 4. In addition, reasonably certain Village at Wolf Creek

development effects would be substantial. Village at Wolf Creek development would convert 140 acres of “winter foraging habitat” and one acre of “other” habitat to “unsuitable” habitat on private land. Significant increases in vehicular traffic generated by Village at Wolf Creek would appreciably impair habitat connectivity along the length of Highway 160 through the designated Wolf Creek Pass Landscape Linkage. This linkage is vital to habitat connectivity in the Southern Rockies Ecosystem and to the recovery of a viable lynx population in Colorado. Increased volumes of high-speed Highway 160 traffic would increase the probability of lynx road-kill to a level resulting in “incidental take” resulting solely from, and directly attributable to, the Village at Wolf Creek development. The present combination of direct, indirect, and reasonably certain effects would profoundly modify and degrade current lynx habitat connectivity, availability, effectiveness within the San Juan core area and the designated landscape linkage, further impair the ability of lynx to maintain a home range encompassing the project area, and appreciably increase the likelihood of death or injury to lynx as a result of highway mortality and by meaningfully impairing behavioral patterns such as denning, foraging, and travel. Alternative 4 is currently inconsistent with nine LCAS measures developed to conserve lynx on Federal lands.

4.6 LAND TENURE AND USE

The environmental consequences (impacts and mitigation) to land tenure and use for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.6-1. Note that this is a partial list of standards reflecting only applicable land use considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Effects on land use as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

Table 4.6-1. Applicable Standards for Federal Action

Parameter	Standard
Rights-of-way	Retain existing access rights where needed to meet Forest Plan Goals and Objectives.
Special Uses	Bury electrical-utility lines of 33 kilovolts or less, and telephone lines, unless one or more of the following applies: <ul style="list-style-type: none"> • SIOs of the area can be met using an overhead line. • Burial is not feasible due to geologic hazard or unfavorable geologic conditions. • Greater long-term site disturbance would result. • It is not technically feasible.
	Do not approve new uses, and phase out current uses, including landfills, where the primary use is storage or disposal of hazardous materials, when the permits expire.
Utility Corridors	Conserve existing and designated inventoried rights-of-way that are identified in the <i>Western Utility Study</i> , to protect them for future construction and occupancy.
	Proposals to use designated utility corridors will be authorized without alternative-route analysis, subject to site-specific environmental analysis.
	Do not authorize conflicting uses of activities in transportation and utility corridors.
	Design of utility and transmission line corridors shall blend with the existing character of the landscape.

Source: USFS 1996a.

4.6.1 Alternative 1 – No Action Alternative

4.6.1.1 Construction Direct and Indirect Effects (Short Term)

There are no construction effects to land use for NFS lands resulting from the No Action Alternative. FSR 391 would continue to serve as access through to the private property and to Alberta Lake. Road improvements, upgrades, and winter access would not be allowed.

4.6.1.2 *Operation Direct and Indirect Effects (Long Term)*

There are no operational effects to land use for NFS lands from the No Action Alternative. FSR 391 would continue to serve as access through to the private property and to Alberta Lake. The Applicant would have limited access to the Village property commensurate with a level of use that would not degrade the road. Any impacts to the road would trigger the need for a collection agreement requiring the Applicant to pay the USFS for the additional road maintenance.

4.6.2 *Alternative 2 – Proposed Action*

4.6.2.1 *Construction Direct and Indirect Effects (Short Term)*

The authorizations for road access and utilities under the Proposed Action would affect approximately 1.65 acres, or less than 0.001 percent of the public lands in Mineral County. This alternative would result in minimal to no effect to the amount of public land in Mineral County.

At most, there would be minimal effects to land use from construction activities along the access road or the utility corridors. Forest management and recreational activities on adjacent lands would be altered little by construction activities. The loss of timber production along the access road and utility corridors would be minimal. Construction activities associated with improving and extending Tranquility Road to meet private property construction and traffic requirements would be conducted so that the current use of Tranquility Road and the parking area by users of the Ski Area (as currently permitted) is not impeded. This may require that construction activities occur only during late spring, the summer months, and early fall when the ski facility is not operational. Approved BMPs would be used to limit any impacts to surrounding areas. Current land use of surrounding lands would continue. Continued perpetual public access to Alberta Lake via FSR 391 would continue under the current management criteria.

4.6.2.2 *Operation Direct and Indirect Effects (Long Term)*

Due to the location of the access road and utility corridors, there would be no direct operational effects to land use. The development of the road and utility corridors are within the NFS Ski Area SUP boundary and are similar in use to those currently utilized by the Ski Area. Current land use of the surrounding lands would not be altered.

4.6.3 Alternative 3 – Snow Shed-East Village Access Alternative

4.6.3.1 Construction Direct and Indirect Effects (Short Term)

The authorizations for Alternative 3 would affect approximately 2.98 acres, or less than 0.001 percent, of the public lands in Mineral County. This alternative would result in little to no effect to the amount of public land in Mineral County.

At most, there would be minimal effects to land use from construction activities along the proposed access road or the utility corridors. Forest management and recreational activities on adjacent lands would have minor impacts from the construction activities. The loss of timber production along the access road and utility corridors would be minimal. Approved BMPs would be used to limit impacts to the surrounding areas. Access to recreational areas at Alberta Lake via FSR 391 would not be impacted.

4.6.3.2 Operation Direct and Indirect Effects (Long Term)

At most, there would be minimal effects to land use from the operation of the access road and utility corridors. The development of the road and utility corridors are within the NFS Ski Area SUP boundary and are similar in use to those currently utilized by the permitted Ski Area. Current land use of the surrounding lands would not be altered. The creation of an all-weather road to the western boundary of the private property could increase winter use of the Alberta Lake area.

4.6.4 Alternative 4 – Dual Road Access Alternative

4.6.4.1 Construction Direct and Indirect Effects (Short Term)

The granting of access roads and utility corridors would have minimal effect on the amount of public lands in Mineral County affecting approximately 3.02 acres, or approximately 0.0011 percent of the public lands.

Construction effects to land use for NFS lands resulting from this alternative would be similar to those for Alternatives 2 and 3. Their combined impacts would be greater than each alone, however, the overall impact would still be minimal along the access road or the utility corridors. Forest management and recreational activities on adjacent lands would be altered little by construction activities. The loss of timber production along the access roads and utility corridors would be minimal. Approved BMPs would be used to limit any impacts to surrounding areas.

Current land use on the surrounding lands would remain unchanged. Access to Alberta Lake via FSR 391 would continue under the current management criteria.

4.6.4.2 *Operation Direct and Indirect Effects (Long Term)*

Operational impacts to land use for NFS lands resulting from this alternative would be similar to those for Alternatives 2 and 3. Their combined impacts would be greater than each alone, however, the overall impact would still be minimal from the operation of the access road and utility corridors. The development of the road and utility corridors are within the NFS Ski Area Special Use Permit boundary and are similar in use to those currently utilized by the permitted Ski Area. Current land use of the surrounding lands would not be altered. The creation of an all-weather road to the western boundary of the private property could increase winter use of the Alberta Lake area.

4.7 SCENIC RESOURCES

The environmental consequences (impacts and mitigation) to scenic resources for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.7-1. Note that this is a partial list of standards reflecting only applicable scenic resource considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal regulations. Affects on scenic resources, as a result of reasonable foreseeable future actions on the private property, are discussed in Section 4.19, Cumulative Impacts. To properly analyze the extent and intensity of effects to scenic resources for each alternative the USFS Scenery Management System will be used.

Table 4.7-1. Applicable Standards for Federal Action

Parameter	Standard
Scenic Resources	<p>The Scenic Integrity Level(s), based on current landscape character, are usually accepted as the SIOs unless highly unusual or special circumstances identify a need to change, and will be limited to:</p> <ul style="list-style-type: none"> • Treatment of small-diameter/suppressed lodgepole pine stands. • Harvest as a result of a disturbance such as fire, windthrow, or insect and disease infestations. Variations in the SIOs may dominate the valued landscape character, but must borrow from the valued attributes such as size, shape, edge effect, and pattern of natural openings, and still meet the minimum requirements of the next lower Objective chosen.
	<p>Management activities which are inconsistent with the SIO will be avoided unless a decision is made to change the Scenic Integrity Level. A decision to change the SIO will be documented in a project-level NEPA decision document.</p>
	<p>If field analysis identifies a need to correct the inventory of Scenic Condition Objectives, the correction will be recorded in an environmental analysis document, approved, and the Forest inventory will be updated. Conditions that could warrant a change in Scenic Condition Levels are:</p> <ul style="list-style-type: none"> • Discrepancies in “inherent scenic attractiveness” classification • Changes in “viewer location” and “sensitivity level” • Discrepancies in “seen area” mapping

Source: USFS 1996a.

4.7.1 Alternative 1 – No Action Alternative

4.7.1.1 Construction Direct and Indirect Effects (Short Term)

Under the No Action Alternative, existing FSR 391 would serve as the primary access road to the private property. No modifications to FSR 391 would occur under this alternative and no utility corridors would be constructed; therefore, no additional short-term direct or indirect effects to scenic resources would result.

4.7.1.2 *Operation Direct and Indirect Effects (Long Term)*

No new access road or utility corridors would be operated under this alternative. Therefore, on federally-managed lands, no direct or indirect long-term effects to scenic resources would result from implementation of the No Action Alternative.

4.7.2 *Alternative 2 – Proposed Action*

4.7.2.1 *Construction Direct and Indirect Effects (Short Term)*

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 1.42 acres by extending Tranquility Road. Under the Proposed Action, the road accessing the Tranquility Parking Lot would become the primary access road to the subject property. The access road would be visible; however, it is not expected to dominate the characteristic landscape. Activities along the access road such as timber removal would be hidden in the foreground when snow is present; however, from key viewpoints such as CDNST, Lobo Overlook, and Highway 160, the corridor may be more visible. When snow is no longer present, the access road would have a higher potential of blending into the landscape from the CDNST. Handkerchief Mesa has a background view of the project area. It is expected that in the background, the access across public lands may be visible, however, it would not be dominant on the landscape from Handkerchief Mesa. With mitigation (outlined in Appendix C, Design Criteria), this access road would meet the SIO of “High”. During initial construction, there would be evidence of landscape alterations that may dominate the valued landscape characteristic; however, this area would have up to 2 years to achieve compliance with the SIOs for the area. After 2 years, it is expected that this access road would meet the SIOs. It should be noted that the utilities would be buried, primarily to reduce impacts to scenic resources. This action alternative would have the least amount of impacts to the Scenic Resources, but would have more impacts than the No Action.

Utility Corridor # 3

The utility corridor would be 10 feet wide with buried utilities placed in a relatively dense canopied forest with minimal disturbance. The utility corridor would disturb approximately 0.23 acre on NFS adjacent to Highway 160. Visitors would expect to see ground disturbance during construction and for up to 2 years after construction is complete. Activities along the utility corridor, such as timber removal, would be hidden in the foreground when snow is present; however, from key viewpoints such as CDNST, Lobo Overlook, and Highway 160, the corridor, may be more visible. After snow melt, the utility corridor would have a higher potential of blending into the landscape from the CDNST. It should be noted that the utilities would be buried, primarily to reduce impacts to scenic resources. With mitigation (outlined in Appendix C), this utility corridor would meet the SIO of “High”.

4.7.2.2 *Operation Direct and Indirect Effects (Long Term)*

In the winter, snow and ice would be removed from the access road segment crossing NFS land. The access road would be visible when there is snow on the ground, and less visible when snow

is not present. However, it is not expected to dominate the existing landscape character. It is expected that visitors would be able to see the access road from three key viewpoints, the CDNST, Highway 160, and Lobo Overlook. Although this road may be seen from the aforementioned viewpoints, it will not dominate the landscape and can meet the intended SIO of “High” with the project design criteria outlined in Appendix C. Long term, viewers can expect to see an increase in traffic along the access road, highway, and the Ski Area entrance, and the possibility of an increase in dust and noise from all the aforementioned key viewpoints. However, with project design criteria, it is expected that these impacts can be mitigated.

Utility Corridor # 3

The utilities would be buried, primarily to reduce impacts to scenic resources. Following rehabilitation, the 10-foot wide corridor is expected to meet the SIOs.

4.7.3 Alternative 3 – Snow Shed - East Village Alternative

4.7.3.1 Construction Direct and Indirect Effects (Short Term)

Short-term construction direct and indirect effects to visual resources from the Snow Shed - East Village Alternative are assumed to be equivalent to those outlined in the Proposed Action.

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 2.75 acres. The access road would be visible; however, it is not expected to dominate the characteristic landscape. Activities along the access road such as timber removal would be hidden in the foreground when snow is present; however, from key viewpoints such as CDNST, Lobo Overlook, and Highway 160, the corridor may be more visible. When snow is no longer present, the access road would have a higher potential of blending into the landscape from the CDNST. Handkerchief Mesa has a background view of the project area. It is expected that in the background, the access across public lands may be visible, however, it would not be dominant on the landscape from Handkerchief Mesa. With mitigation (outlined in Appendix C), this access road would meet the SIO of “High”. During initial construction, there will be evidence of landscape alterations that may dominate the valued landscape characteristic; however, this area has up to 2 years to come into compliance with the SIOs for the area. After 2 years, it is expected that this access road will meet the SIOs. This action alternative would have more impacts to the Scenic Resources than Alternative 2, but less than Alternative 4.

Utility Corridor #3

The Impacts would be the same as described in Section 4.7.2.1 for Utility Corridor #3.

4.7.3.2 *Operation Direct and Indirect Effects (Long Term)*

In the winter, snow and ice would be removed from the access road segment crossing NFS land. The access road would be visible when there is snow on the ground, and less visible when snow is not present. However, it is not expected to dominate the existing landscape character. It is expected that visitors would be able to see the access road from three key viewpoints, the CDNST, Highway 160, and Lobo Overlook. Although this road may be seen from the aforementioned viewpoints, it would not dominate the landscape and can meet the intended SIO of “High” with the project design criteria outlined in Appendix C, Design Criteria. Long term, viewers can expect to see an increase in traffic along the access road, highway, and the ski area entrance, and the possibility of an increase in dust and noise from all the aforementioned key viewpoints. However, with project design criteria, it is expected that these impacts can be mitigated.

Utility Corridor #3

The Impacts would be the same as described in Section 4.7.2.1 for Utility Corridor #3.

4.7.4 *Alternative 4 – Dual Access Road Alternative*

4.7.4.1 *Construction Direct and Indirect Effects (Short Term)*

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 2.79 acres. In alternative 4, the construction of both the 250 feet Tranquility access road and the 750 feet Snow Shed access road, and the adjacent utility corridors, would result in more impacts to the Scenic Resources on National Forest Service Lands; however, these activities under this alternative are still not expected to dominate the landscape character. As with Alternatives 2 and 3, activities along the access road such as timber removal would be hidden in the foreground when snow is present; however, from key viewpoints such as CDNST, Lobo Overlook, and Highway 160, the corridor may be more visible. When snow is no longer present, the access road would have a higher potential of blending into the landscape from the CDNST. During initial construction, there would be evidence of landscape alterations that may dominate the valued landscape characteristic; however, the areas would have up to 2 years to come into compliance with the SIOs for the area. After 2 years, it is expected that this access road would meet the SIOs of “High”. This alternative is expected to have the most impacts to the Scenic Resources when compared to any of the other alternatives.

Utility Corridor #3

The impacts would be the same as described in Section 4.7.2.1 for Utility Corridor #3.

4.7.4.2 *Operation Direct and Indirect Effects (Long Term)*

The operation of both the Tranquility Road access road and the more direct, shortened Snow Shed access road, along with the adjacent utility corridors, would result in approximately twice the disturbance to scenic resources compared to Alternatives 2 or 3. In the winter, snow and ice

would be removed from the access road segment crossing NFS land. The access roads would be visible when there is snow on the ground, and less visible when snow is not present. However, the roads are not expected to dominate the existing landscape character. It is expected that visitors would be able to see the access roads from three key viewpoints, the CDNST, Highway 160, and Lobo Overlook. This alternative is expected to have the most impacts to the Scenic Resources when compared to any of the other alternatives. Although the roads may be seen from the aforementioned viewpoints, they would not dominate the landscape and can meet the intended SIO of “High” with the project design criteria outlined in Appendix C, Design Criteria. Long term, viewers can expect to see an increase in traffic along the access road, highway, and the ski area entrance, and the possibility of an increase in dust and noise from all the aforementioned key viewpoints. However, with project design criteria, it is expected that these impacts can be mitigated.

Utility Corridor #3

The Impacts would be the same as described in Section 4.7.2.2 for Utility Corridor #3.

4.8 RECREATION RESOURCES

The environmental consequences (impacts and mitigation) to recreation resources for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.8-1. Note that this is a partial list of standards reflecting only applicable recreation considerations. A complete list of standards and guidelines is available in the Forest Plan. These Standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable State and Federal Regulations. Affects on recreation resources as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

Table 4.8-1. Applicable Standards for Federal Action

Parameter	Standard
General	Availability of outfitter-guide special-use permits will be based on a capacity study.
	When capacity has been met for a certain special-use activity, no further permits will be issued.
	Design and manage developed recreation sites according to the adopted ROS class and SIO(s).
Developed Recreation	All new or reconstructed developed recreation sites will offer a range of opportunities accessible to people with disabilities, within the limits of the site characteristics.
	Vegetative-management plans shall be developed and implemented for all developed sites, to enhance the natural setting and maintain or develop the desired vegetation.
	Camping will be limited to 14 days in any one location within a 30-day period.
	Facilities at trailheads shall be consistent with the recreation setting and include adequate space for parking, trailhead panels for trail information, and appropriate sanitation facilities.
	Developed recreation areas will be withdrawn from locatable-mineral entry.
Dispersed Recreation	A SIO of "High" ("management activities are not evident to the casual visitor and the area appears natural") will be met within the foreground for all National Scenic and Recreation Trails.
	Camping is limited to 14 days within a 30-day period.
	Close, rehabilitate, or otherwise mitigate dispersed sites when:
	<ul style="list-style-type: none"> • Campsite condition reaches Frisell-Cole Class 4 or 5. • Site occupancy does not meet the adopted SIO. • There are social conflicts. • Unacceptable environmental damage is occurring.
	If use exceeds the area capacity for a given ROS class, the following management actions, in order of priority, should be employed to address the impacts or effects on the recreation setting:
<ul style="list-style-type: none"> • Inform the public and restore the site. • Regulate use. • Restrict the number of users. • Close the area or site. 	
Recreation use will be managed to stay within the capacity for the ROS objective.	

Table 4.8-1. Applicable Standards for Federal Action (continued)

Parameter	Standard
Wilderness Resources	Recreational panning, sluicing and dredging shall not be allowed.
	National Register of Historic Places – eligible or listed historic structures are managed to be compatible with the wilderness setting.
	Commercial services may be performed within Wilderness to the extent necessary for activities which are proper for realizing recreational, educational, or other wilderness purposes of the areas (<i>Wilderness Act</i> of 1964).
	Maximum group size: no more than 15 people per group; with a maximum combination of people and stock not to exceed 25 in any one group for all wilderness areas.
	Recreational livestock are prohibited from being restrained within 100 feet of lake shores and streams or within riparian areas except as justified by terrain.
	Where forage is limited, require stock-users camping overnight to use processed feeds or certified weed-free hay for their stock that are free of viable noxious-weed seeds.
	Disposal of human waste and wash water is prohibited within 100 feet of any water source.

Source: USFS 1996a.

4.8.1 Alternative 1 – No Action Alternative

4.8.1.1 Construction Direct and Indirect Effects (Short Term)

The No Action Alternative requires the use of FSR 391 for access to the subject property. Use of FSR 391 would remain within the management characteristics and use limitations outlined in Chapter 2. Under the No Action Alternative, no improvements would occur to FSR 391 that would result in access delays or compromise the dispersed summer recreational resources or opportunities on lands directly adjacent to the subject private lands. In the future, if the private property owner wishes to use FSR 391 for vehicular access to the subject property during those times of the year when the road is otherwise closed to such use, the landowner would need to apply for and secure special use authorization from the NFS.

No short-term direct or indirect effects to summer or winter dispersed or developed recreation resources or opportunities are anticipated along the Highway 160 corridor or at the Ski Area due to implementation of the No Action Alternative.

4.8.1.2 Operation Direct and Indirect Effects (Long Term)

Under this alternative, groomed cross-country ski trails in the Alberta Park area may be altered or eliminated on private land. However, because limited seasonal access to the subject property could still be achieved under the No Action Alternative, development on the private land could still occur which could generate effects to dispersed and developed summer and winter recreation opportunities and resources as discussed in Section 4.19, Cumulative Impacts and Appendix A, Development of the Village at Wolf Creek.

4.8.2 Alternative 2 – Proposed Action

4.8.2.1 Construction Direct and Indirect Effects (Short Term)

Short-term direct and indirect effects to developed winter recreation resources and opportunities from implementation of the Proposed Action are expected to occur. Ski Area users would experience a disruption along Tranquility Road from access road and utility corridors construction activities. Tranquility Road is directly adjacent to a large parking lot complex for the Ski Area. The traffic management problems and congestion issues related to the shared use of Tranquility Road would result in direct effects to the Ski Area users, which would compromise their recreational experience. In addition, construction of the utility corridors and the access road along the Tranquility Road alignment could result in indirect effects to Ski Area customers by limiting the connectivity of skiable terrain and require negotiation of impassable structures and construction areas that would be built as part of the Proposed Action.

During the summer, Tranquility Road does not serve as a primary access road to recreational resources or opportunities. FSR 391, which parallels Tranquility Road, would provide any necessary access for users. Because public access across FSR 391 would remain unchanged from the current management conditions, there would be no direct or indirect effects to dispersed summer recreation resources or opportunities (biking, fishing, hunting, camping, horseback riding, boating, photography, picnicking) accessed from FSR 391.

Because the short-term construction phase would not introduce any additional recreational users to the area of potential effect, no short-term direct or indirect effects to dispersed or developed summer or winter recreation resources along the Highway 160 corridor would occur due to implementation of this alternative. In addition, construction of the access road and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roded Natural for that area. Any potential increase in the number of future recreational users based on development of the subject private land is speculative and is therefore discussed in Section 4.19 and Appendix A.

4.8.2.2 Operation Direct and Indirect Effects (Long Term)

Over the long-term, the operation of an all-weather, year-round access road and utility corridors could allow for some amount of development on the private property lands. Once the access road is built, vehicle traffic could consist of construction equipment, passenger vehicles, buses, and other vehicles and transportation to support any potential development. The nature and scale of any development and subsequent usage is speculative and is discussed further in Section 4.19 and Appendix A.

During operation of the access road and utility corridors under the Proposed Action, dispersed recreational opportunities directly adjacent to the private property site (fishing, camping, hunting, hiking, biking, horseback riding, boating, picnicking, photography, skiing) would experience both direct and indirect long-term effects. The most significant direct long-term effects to developed winter recreational resources would be to the Ski Area users who are required to park in the Tranquility Parking Lot. Because the Proposed Action requires use of Tranquility Road, traffic accessing the private property could directly affect Ski Area customers

parked in the Tranquility Parking Lot. Under high use periods such as holidays, weekends, and spring break, the increased number of vehicles could result in safety problems, congestion, and increased traffic volumes. In addition, the operation of the utility corridors and the access road along the Tranquility Road alignment could have indirect effects to Ski Area customers by limiting the connectivity of skiable terrain and require negotiation of temporary bridges over ski trails within the Ski Area to maintain the use of these ski trails.

Currently, Alberta Park has a maintained nordic trail system for cross-country skiers. In the event that passenger vehicles, buses, construction vehicles, and other transportation necessary to support any potential development use of Tranquility Road to gain access to the private lands, the likelihood of some modification to, or the potential elimination of, portions of the existing groomed cross-country ski trail on private land within Alberta Park is likely. Therefore, operation of Tranquility Road as an access road to the subject private lands could result in a long-term direct effect to the dispersed recreational opportunity to cross-country skiing on the existing groomed nordic trail. People seeking dispersed summer recreational resources and opportunities (fishing, hunting, camping, horseback riding, photography, biking hiking, picnicking) on lands surrounding the subject private lands would still be afforded access along FSR 391. No change to the current management practice of FSR 391 would occur under the Proposed Action; therefore, no direct or indirect effects to dispersed summer recreational resources at Alberta Park Reservoir, on the CDNST, or on lands surrounding the subject private lands would result.

There would be no significant direct or indirect effects to summer or winter dispersed or developed recreation resources and opportunities along the Highway 160 corridor due to implementation of the Proposed Action. Operation of the access road and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roaded Natural for that area.

4.8.3 Alternative 3 – Snow Shed - East Village Alternative

4.8.3.1 *Construction Direct and Indirect Effects (Short Term)*

The Snow Shed access road is directly adjacent to Highway 160 and several hundred feet north of the parking lot complex of the Ski Area. Under this alternative, specific short-term direct and indirect effects to dispersed and developed summer and winter recreation resources and opportunities are expected to be similar to the Proposed Action. However, no use of Tranquility Road as an access to the private land is proposed as part of this alternative. As a result, the congestion and traffic problems directly affecting the Ski Area winter users would not occur. In addition, Ski Area users would not be affected by the reduced connectivity of skiable terrain and required negotiation of temporary bridges over ski trails within the Ski Area around Tranquility Road. Furthermore, construction of the access road and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roaded Natural for that area. Any potential increase in the number of future recreational users based on development of the subject private land is speculative and is therefore discussed in Section 4.19 and Appendix A.

4.8.3.2 *Operation Direct and Indirect Effects (Long Term)*

Specific long-term direct and indirect effects to dispersed and developed summer and winter recreation resources and opportunities under this Alternative are expected to be similar to the Proposed Action. However, no use of Tranquility Road as an access to the private land is proposed as part of this alternative. Therefore, during the winter, the operational traffic congestion and safety issues related to the use of Tranquility Road would not occur as part of this alternative. Operation of the Snow Shed access road and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roded Natural for that area.

4.8.4 *Alternative 4 – Dual Road Access Alternative*

4.8.4.1 *Construction Direct and Indirect Effects (Short Term)*

The construction of both the Tranquility access road and the 750-foot Snow Shed access road, along with the construction of the utility corridors from both Alternatives 2 and 3, would result in approximately twice the density and volume of construction traffic associated with the short-term construction phase of project implementation. However, it is rather unlikely that construction on both access roads would occur at the same time. Specific short-term direct and indirect effects to dispersed and developed summer and winter recreation resources and opportunities are expected to be similar as those outlined under the Proposed Action. Construction of the two access roads and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roded Natural for that area. Any potential increase in the number of future recreational users based on development of the subject private land is speculative and is therefore discussed in Section 4.19 and Appendix A.

4.8.4.2 *Operation Direct and Indirect Effects (Long Term)*

Although the construction of both the Tranquility access road and the 750-foot Snow Shed access road, along with the construction of the utility corridors, would result in approximately twice the density and volume of construction traffic associated with the short-term construction phase of project implementation, the long-term effects of operating the access roads and utility corridors would be similar to those outlined in the Proposed Action and Alternative 3. Specific long-term direct and indirect effects to dispersed and developed summer and winter recreation resources and opportunities are expected to be similar as those outlined under the Proposed Action and Alternative 3. However, during the Ski Area winter operation season (November through April), a portion of the traffic accessing the private land could do so along the Snow Shed access road. The result of having a second access road would reduce the traffic congestion and safety issues associated with joint use of Tranquility Road by Ski Area users and individuals accessing the private land. Operation of the two access roads and utility corridors within the Ski Area permit boundary would be compatible with the existing ROS setting of Roded Natural for that area.

Although more land would be affected by the construction and operation of multiple access roads and utility corridors, the existing recreation opportunities in the area of potential effect would not be directly affected. The proposed locations of the Tranquility and Snow Shed access roads as

well as the utility corridors do not currently provide primary access to recreation opportunities. FSR 391 would continue to provide access to the host of summer dispersed recreation opportunities (fishing, hunting, boating, picnicking, camping, hiking, horseback riding), while in the winter, the groomed trail along FSR 391 would provide access to dispersed winter opportunities (Pass Creek yurt, cross-country skiing, and snowshoeing).

4.9 TRAFFIC AND TRANSPORTATION

The environmental consequences (impacts and mitigation) to transportation and traffic for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.9-1, which presents a partial list of standards reflecting only applicable traffic and transportation considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal regulations. Affects on traffic and transportation as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts. Snow removal, mitigation measures, and monitoring responsibilities are discussed in Section 4.1 Surface Water.

Table 4.9-1. Applicable Standards for Federal Action

Parameter	Standard
Travelways	<p>Closed or restricted roads may be used for administrative purposes if the use is approved by the District Ranger.</p> <hr/> <p>Designated travelways, as displayed on the Rio Grande National Forest Visitor Map, and newly constructed travelways are open to motorized-vehicle use unless a documented decision shows that:</p> <ul style="list-style-type: none"> • Motorized use conflicts with Forest Plan Objectives. • Motorized use is incompatible with the ROS class. • Travelways are in areas closed to motorized use and are not “designated routes”. • Motorized use creates user conflicts that result in unsafe conditions unrelated to weather conditions. • Physical characteristics of travelways are hazardous for motorized use. • Travelways do not serve an existing or identified future public need. • Financing is not available for maintenance necessary to protect resources. <hr/> <p>On all lands except designated travelways, motorized use with wheeled vehicles is restricted unless the Forest Map or a Forest Order indicates that such use is specifically allowed. Snow machine use on snow is allowed unless specifically restricted.</p> <hr/> <p>Perennial stream crossings will be constructed to maintain stream flow sufficient to allow bidirectional movement of adult and juvenile fish and related aquatic organisms.</p>

Source: USFS 1996a.

4.9.1 Alternative 1 – No Action Alternative

4.9.1.1 Construction Direct and Indirect Effects (Short Term)

Under the No Action Alternative, FSR 391 would remain in its current configuration and would be utilized for vehicular access in to and out of the private property from June through September. Road improvements, upgrades, and winter access would not be allowed. Because there would be no construction, no additional traffic or transportation impacts would occur. Development of the private property is reasonably foreseeable and would impact traffic and

transportation, as discussed in Section 4.19, Cumulative Impacts, and Appendix A, Development of the Village at Wolf Creek.

4.9.1.2 *Operation Direct and Indirect Effects (Long Term)*

FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Managed use would remain per existing conditions, including occasional grading typical of gravel roads, as well as dust control. The grading and dust control are paid for by the permittee. The USFS requires a Road Use Permit to authorize the traffic that development may cause. Maintenance cost sharing specifications between USFS and the landowner, such as monitoring of effects, may be included in the Road Use Permit. Operations under the No Action Alternative would continue to impact traffic and transportation as described in Section 3.9, Traffic and Transportation. Snow removal, mitigation measures, and monitoring responsibilities are discussed in Section 4.1, Surface Water. Traffic on Highway 160 would not be impacted.

Safety

There would be only one year-round point of access to the Village which is (FSR 391). The existing access would continue with vehicular traffic to Alberta Lake and forest uses such as summer mountain maintenance for the Ski Area, as well as biking and hiking in the area.

No change would occur to the evacuation of the public for safety reasons such as forest fires, flooding, gas leaks, accidents on Highway 160, avalanches, etc.

4.9.2 *Alternative 2 – Proposed Action*

4.9.2.1 *Construction Direct and Indirect Effects (Short Term)*

Access Road and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 1.42 acres, extending Tranquility Road, which is currently under construction. Construction would create delays on Highway 160 due to construction traffic exiting the highway. The construction may also conflict with early spring Ski Area operations when FSR 391 is not open to serve the Alberta lift. The landowner would be responsible for maintenance and monitoring of impacts from construction of the access road. Utility construction along Highway 160 would affect traffic. The use of USFS standard practices, including BMPs (i.e., flagmen, signalization devices, scheduling), would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal. Development of the private property is

reasonably foreseeable and would impact traffic and transportation, as discussed in Section 4.19, and Appendix A.

Utility Corridor #3

The utility corridor would disturb approximately 0.23 acre and would require BMPs to minimize construction impacts on traffic and transportation. The landowner would be responsible for maintenance and monitoring of impacts from construction of the utility corridors. Construction maintenance and monitoring would minimize the short-term effects of the proposed utility corridor. In addition to standard mitigation practices presented in Chapter 2, Proposed Action and Alternatives, BMPs to reduce impacts to traffic and transportation would include scheduling construction during reduced traffic and transportation periods and use of flagmen and/or signalization devices. USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal.

4.9.2.2 *Operation Direct and Indirect Effects (Long Term)*

Maintenance and operation of the access road would have minimal impact on traffic and transportation. The utility corridor would not have any long-term impacts on traffic and transportation. The exception is utility maintenance, which if required, would be the same as the short-term effects discussed above. Snow removal, mitigation measures, and monitoring responsibilities are discussed in Section 4.1.

Mineral County and USFS Road Regulations

The access road would comply with Mineral County and USFS regulations. Grades of the existing Tranquility Road are 7 to 7.5 percent based on design grades. Transitions from the access road to Tranquility Road would be consistent with these design grades.

Safety

There would be only one year-round point of access to the Village from Highway 160 via an extension of Tranquility Road. The existing access road would continue with vehicular traffic to Alberta Lake and forest uses such as summer mountain maintenance for the Ski Area, as well as biking and hiking in the area.

No change would occur to the evacuation of the public for safety reasons such as forest fires, flooding, gas leaks, accidents on Highway 160, avalanches, etc.

4.9.3 Alternative 3 – Snow Shed-East Village Access Alternative

4.9.3.1 Construction Direct and Indirect Effects (Short Term)

Access Road and Adjacent Utility Corridors

Alternative 3 access roads and adjacent utility corridors would disturb approximately 2.75 acres. The topography between Highway 160 and the private property slopes from north to south, varying from approximately 10 to 30 percent. This would require the access road to be constructed using a switch-back and two crossings over the north unnamed tributary of Pass Creek. Construction would create delays on Highway 160 due to traffic exiting the highway. The landowner would be responsible for maintenance and monitoring of impacts from construction of the access road. Utility construction along Highway 160 would affect traffic. USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal. Development of the private property is reasonably foreseeable and would have impacts on traffic and transportation, as discussed in Section 4.19 and Appendix A.

Utility Corridor #3

The utility corridor would disturb approximately 0.23 acre. The utility corridor is located on an approximately 6 to 10 percent slope. The utility corridor would require BMPs, specifically sized and designed for construction on slopes. In addition, construction maintenance and monitoring would minimize the short-term effects of the proposed utility corridor. BMPs would include a revegetation plan that would restabilize the utility corridor. USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal. The landowner would be responsible for maintenance and monitoring of impacts from construction of the utility corridor.

4.9.3.2 Operation Direct and Indirect Effects (Long Term)

Maintenance and operation of the access road would have minimal effects on traffic and transportation. The landowner would be responsible for maintenance and monitoring of impacts from construction of the access roads. Note that the utility corridor, once stabilized and revegetated, would not have any long-term effects on traffic and transportation. The exception is utility maintenance, which if required, would be the same as the short-term effects discussed above. Snow removal, mitigation measures, and monitoring responsibilities are discussed in Section 4.1.

Mineral County and USFS Road Regulations

The access road would comply with Mineral County and USFS regulations. The access road design has grades of approximately 6 percent with a switchback. The road traverses the hillside, which is approximately 20 percent grade. Transitions from the access road to Highway 160 would be consistent with Mineral County and USFS design grades.

Safety

There would be only one year-round point of access to the Village (from Highway 160 at a point approximately 0.33 mile east of the current entrance to the Ski Area and approximately 0.25 mile west of the Snow Shed. The access would continue with vehicular traffic to Alberta Lake and forest uses such as summer mountain maintenance for the Ski Area, as well as biking and hiking in the area.

No change would occur to the evacuation of the public for safety reasons such as forest fires, flooding, gas leaks, accidents on Highway 160, avalanches, etc.

4.9.4 Alternative 4 – Dual Access Road Alternative

4.9.4.1 Construction Direct and Indirect Effects (Short Term)

Access Roads and Adjacent Utility Corridors

Road and adjacent utility corridor construction would disturb approximately 1.42 acres, extending Tranquility Road, which is currently under construction. Road and adjacent utility corridor construction of the Snow Shed access would disturb an additional 1.37 acres. Construction would create delays on Highway 160 due to traffic exiting the highway. Construction may also conflict with early spring Ski Area operations when FSR 391 is not open to serve the Alberta lift. Utility construction along Highway 160 would affect traffic. USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal. Development of the private property is reasonably foreseeable and would have impacts on traffic and transportation, as discussed in Section 4.19 and Appendix A.

Utility Corridor #3

The utility corridor would disturb approximately 0.23 acres. The utility corridor is located on an approximately 6 to 10 percent slope and would require BMPs specifically sized and designed for construction on slopes. In addition, construction maintenance and monitoring would minimize

the short-term effects of the proposed utility corridor. BMPs would include a revegetation plan that would restabilize the utility corridor. USFS standard practices, including BMPs, would be adequate to insure that the short-term construction and indirect effects on traffic and transportation would be minimal. The landowner would be responsible for maintenance and monitoring of impacts from construction of the utility corridor.

4.9.4.2 *Operation Direct and Indirect Effects (Long Term)*

Maintenance and operation of the access roads would have minimal effects on traffic and transportation. The topography between Highway 160 and the private property slopes steeply from north to south, varying from approximately 10 to 30 percent. Note that the utility corridor would not have any long-term effects on traffic and transportation. The exception is utility maintenance, which if required, would be the same as the short-term effects discussed above. Snow removal, mitigation measures, and monitoring responsibilities are discussed in Section 4.1.

Mineral County and USFS Road Regulations

The access roads would comply with Mineral County and USFS regulations. The access road designs have grades of up to approximately 7.5 percent. The access road traverses the hillside, which is approximately a 20 percent grade. Transitions from the access roads to Highway 160 would be consistent with Mineral County and USFS design grades.

Safety

There would be two year-round points of access to the Village through an extension of Tranquility Road and at a point approximately 0.33 mile east of the current entrance to the Ski Area and approximately 0.25 mile west of the Snow Shed. The access road would continue with vehicular traffic to Alberta Lake and forest uses such as summer mountain maintenance for the Ski Area, as well as biking and hiking in the area.

No change would occur to the evacuation of the public for safety reasons such as forest fires, flooding, gas leaks, accidents on Highway 160, avalanches, etc.

4.10 CULTURAL RESOURCES

This section discusses the potential effects on cultural resources associated with the construction and operation of the Proposed Action and each alternative. The environmental consequences (impacts and mitigation) to cultural resources for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for the evaluation are summarized in Table 4.10-1. Note that this is a partial list of standards reflecting only applicable cultural resource considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Affects on cultural resources as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

Table 4.10-1. Applicable Standards for Federal Action

Parameter	Standard
Heritage Resources	Conduct all land management activities in such a manner as to comply with all applicable Federal, state, and local regulations. Many heritage resources values can be protected effectively through application of the provisions of these regulations: <ul style="list-style-type: none"> • The <i>National Historic Preservation Act</i> of 1966, (P.L. 89-665, as amended) • <i>Native American Grave Protection and Repatriation Act</i> (NAGPRA), (P.L. 101-601) • <i>Archeological Resources Protection Act</i> of 1979 P.L. 96-95

Source: USFS 1996a.

4.10.1 Alternative 1 – No Action Alternative

4.10.1.1 Construction Direct and Indirect Effects (Short Term)

The No Action Alternative would include use and minimal maintenance of FSR 391 as a seasonal access road, and no construction of utilities outside of the private property. There would be no road or utility construction under this alternative, thus no construction impacts, direct or indirect, would occur to cultural resources.

4.10.1.2 Operation Direct and Indirect Effects (Long Term)

FSR 391 is an existing road and already receives maintenance. There are no historic properties adjacent to the road. Operational and maintenance activities would be conducted within the road easement. Because such activities would be conducted in areas already disturbed by construction and maintenance of the road, there would be no direct impacts to historic properties. Because the road already exists, use and maintenance of the road would not result in any additional impacts.

4.10.2 Alternative 2 – Proposed Action

4.10.2.1 Construction Direct and Indirect Effects (Short Term)

No historic properties have been identified within the ROI for the road or utility corridors. Thus, there would be no direct impacts to historic properties from construction of the road or the utility corridors. There are no cultural resources located near the road and utility corridors ROI, and erosion controls would be in effect for all construction activities; thus, no indirect erosion impacts from construction activities to cultural resources would occur. Indirect impacts to cultural resources located further outside the ROI from noise and visual intrusions associated with construction activities (such as smoke or dust) would be short-term in duration and not significant.

4.10.2.2 Operation Direct and Indirect Effects (Long Term)

Operation of the access road and utility corridors would not result in any direct impacts to historic properties. Operational and maintenance activities would be conducted within the ROI for the road and utility corridors, which does not contain any historic properties. Also, such activities would mostly be conducted in areas already disturbed by construction.

The indirect visual impact to cultural resources outside the ROI from expanding the road, adding an additional 250 feet, and adding utility corridors would be minimal. Multiple visible developments already occur in the area, including Highway 160 and the Ski Area, and the resulting visual impact from the road and utility corridors would be additive, but not significant.

4.10.3 Alternative 3 – Snow Shed - East Village Access Alternative

4.10.3.1 Construction Direct and Indirect Effects (Short Term)

No historic properties have been identified within the ROIs for the access road or utility corridors. Thus, there would be no direct impacts to historic properties from construction of the road or either location of the utility corridors. There are no cultural resources located near the ROIs for the road or the utility corridors, and erosion controls would be in effect for all construction activities; thus, no indirect erosion impacts from construction activities to cultural resources would occur. Indirect impacts to cultural resources located further outside the ROIs from noise and visual intrusions associated with construction activities (such as smoke or dust) would be short-term in duration and not significant.

4.10.3.2 *Operation Direct and Indirect Effects (Long Term)*

Operation of the access road and utility corridors would not result in any direct impacts to historic properties. Operational and maintenance activities would be conducted within the ROIs for the road and both locations of utility corridors, which do not contain any historic properties. Also, such activities would mostly be conducted in areas already disturbed by construction.

The indirect visual impact to cultural resources outside the ROIs from the new access road and new utility corridors would be minimal. Multiple visible developments already occur in the area, including Highway 160 and the Ski Area, and the resulting impact from the road and utility corridors would be additive, but not significant.

4.10.4 *Alternative 4 – Combined Access Alternative*

4.10.4.1 *Construction Direct and Indirect Effects (Short Term)*

No historic properties have been identified within the ROIs for either access road or any of the utility corridors. Thus, there would be no direct impacts to historic properties from construction of the roads or utility corridors. There are no cultural resources located near the ROIs for the road or the utility corridors, and erosion controls would be in effect for all construction activities; thus, no indirect erosion impacts from construction activities to cultural resources would occur. Indirect impacts to cultural resources located further outside the ROIs from noise and visual intrusions associated with construction activities (such as smoke or dust) would be short-term in duration and not significant.

4.10.4.2 *Operation Direct and Indirect Effects (Long Term)*

Operation of the access roads and utilities would not result in any direct impacts to historic properties. Operational and maintenance activities would be conducted within the ROIs for the roads and both locations of utility corridors, which do not contain any historic properties. Also, such activities would mostly be conducted in areas already disturbed by construction.

The indirect visual impact to cultural resources outside the ROIs from the new access roads and new utility corridors would be minimal. Multiple visible developments already occur in the area, including Highway 160 and the Ski Area, and the resulting impact from the road and utility corridors would be additive, but not significant.

4.11 Social Environment

The environmental consequences to social environment from the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Affects on social environment as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts and Appendix A, Development of the Village at Wolf Creek.

4.11.1 Alternative 1—No Action Alternative

4.11.1.1 Construction Direct and Indirect Effects (Short Term)

No effects would be expected. Implementation of the No Action Alternative would not generate any additional jobs or business revenues in the ROI, nor would it affect income, population, housing, public services, or protection of children.

4.11.1.2 Operations Direct and Indirect Effects (Long Term)

No effects would be expected. Implementation of the No Action Alternative would not generate any additional jobs or business revenues in the ROI, nor would it affect income, population, housing, public services, or protection of children.

4.11.2 Alternative 2—Proposed Action

4.11.2.1 Construction Direct and Indirect Effects (Short Term)

Short-term direct and indirect minor beneficial effects would be expected. The expenditures associated with the extension of Tranquility Road would generate a very small and temporary increase in economic activity. The estimated capital cost for constructing the extension, however, is less than \$30,000 (CDOT 2004b) and would not be sufficiently large to create any new jobs in the region. The construction project would be small enough to be completed without any additional new workers, and the overall increase in spending would be too small to create additional labor demand. Hence, the direct and indirect expenditures resulting from the construction project would likely account for only a minor increase over the ROI's baseline economic conditions. In addition, the economic benefits would be short-term, lasting only for the duration of the construction project.

4.11.2.2 Operations Direct and Indirect Effects (Long Term)

No long-term effects would be expected. The operation of the road would require no new employment. Additional expenditures for maintenance would be minimal and would have no effect on the regional economy.

4.11.3 Alternative 3—Snow Shed - East Village Access Road Alternative

4.11.3.1 *Construction Direct and Indirect Effects (Short Term)*

Short-term direct and indirect minor beneficial effects would be expected. The expenditures associated with construction of a new access road would increase sales volume, employment, and income in the ROI. Alternative 3 would involve more construction than Alternative 2, but the impacts would still be minor. This Alternative is estimated to cost approximately \$861,000 (CDOT 2004b) and would generate an additional 16 temporary jobs in the ROI. The available labor force within the ROI would be sufficient to meet the labor needs of such a small increase in employment. The expenditures, employment, and income generated from the construction would account for only a minor increase over the ROI's baseline economic conditions. In addition, the economic benefits would be short-term, lasting only for the duration of the construction project.

4.11.3.2 *Operations Direct and Indirect Effects (Long Term)*

No long-term effects would be expected. The operation of the road would require no new employment. Additional expenditures for maintenance would be minimal and would have no effect on the regional economy.

4.11.4 Alternative 4—Combination of the Alternative 2 and Alternative 3 Actions

4.11.4.1 *Construction Direct and Indirect Effects (Short Term)*

Short-term direct and indirect minor beneficial effects would be expected. The expenditures associated with construction of the Tranquility Road extension and construction of the Snow Shed East access road would increase sales volume, employment, and income in the ROI. Because Alternative 4 encompasses the construction actions of Alternative 2 and Alternative 3, the project would generate economic impacts equal to the impacts of the two combined actions, but the impacts would still be minor. The action would generate approximately 16 temporary jobs. The available labor force within the ROI would be sufficient to meet this very small and temporary increase in employment. The expenditures, employment, and income generated from the construction would account for only a minor increase over the ROI's baseline economic conditions. The economic benefits would be short-term, lasting only for the duration of the construction project.

4.11.4.2 *Operations Direct and Indirect Effects (Long Term)*

No long-term effects would be expected. The operation of the road would require no new employment. Additional expenditures for maintenance would be minimal and would have no effect on the regional economy.

4.11.5 USFS Cost Benefit Analysis

An economic efficiency analysis was completed allowing comparison among alternatives. The economic analysis goes beyond the agency to consider all costs and benefits to society. The current analysis is somewhat different from the conventional analyses performed by the USFS

associated with timber or mining leases that lead to an array of fees or royalties to the Government. The proposed alternatives evaluated for this EIS are not directly associated with any other action that would generate revenues. Typically, a financial analysis would be performed to compare the cost to the Forest Service with the revenues that would be paid to the Forest Service for the full life of the project. The proposed actions, however, would not be directly associated with natural resource extraction activities or promotion of development on USFS land. Therefore, no fees or royalties would be paid to the USFS, rendering a financial analysis irrelevant (the USFS would bear only costs and would derive no revenues from any of the proposed actions).

In calculating the economic efficiency of the alternatives, the analysis was limited to comparing the costs for the Forest Service to the short term benefits accruing from the construction activities associated with the proposed alternatives (other than the No Action Alternative). The primary benefit would be temporary increases in labor income associated with construction jobs. As described earlier, labor income was estimated using the IMPLAN model. The costs borne by the Forest Service are a one-time cost for permit preparation and an annual cost for permit administration.

The following table compares the Present Net Value (PNV) and the Benefit/Cost (B/C) ratios for each of the proposed alternatives.

Table 4.11-1. Comparison of PNV and B/C Ratios for Proposed Alternatives

	Alternative 2	Alternative 3	Alternative 4
PNV	-\$7,306	\$348,457	\$351,243
B/C Ratio	0.62	39.53	20.42

Note: Alternative 1 is the No Action Alternative.

Alternative 3 and Alternative 4 show a much higher B/C ratio because of the much larger estimated construction spending for these alternatives. The Forest Service expenditures for all alternatives are estimated to be quite low, ranging from \$2,000 for permit preparation for Alternative 3 to \$4,000 for Alternatives 2 and 4. Annual administrative costs are similarly small ranging from \$500 for Alternative 3 and \$1,000 for Alternatives 2 and 4.

4.12 ENVIRONMENTAL JUSTICE

The environmental consequences (impacts) to environmental justice for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Affects on environmental justice as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

4.12.1 Alternative 1—No Action Alternative

4.12.1.1 *Construction Direct and Indirect Effects (Short Term)*

Under the No Action Alternative, existing conditions would continue. FSR 391 would remain in its current configuration and be utilized as access in to and out of the private property. There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of this alternative. No environmental justice impacts would be expected.

4.12.1.2 *Operation Direct and Indirect Effects (Long Term)*

FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Managed use of the road would remain per existing conditions, including grading of gravel roads. There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of this alternative. No environmental justice impacts would be expected.

4.12.2 Alternative 2—Proposed Action

4.12.2.1 *Construction Direct and Indirect Effects (Short Term)*

Road and utility corridor construction would disturb approximately 1.65 acres extending Tranquility Road to accommodate a new road surface and two utility corridors and a third stand alone utility corridor. There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of constructing this alternative. No environmental justice impacts would be expected.

4.12.2.2 *Operation Direct and Indirect Effects (Long Term)*

There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of implementing this alternative. No environmental justice impacts would be expected.

4.12.3 Alternative 3—Snow Shed - East Village Alternative

4.12.3.1 Construction Direct and Indirect Effects (Short Term)

Road and utility corridor construction would disturb approximately 2.98 acres under this alternative. There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of constructing Alternative 3. No environmental justice impacts would be expected.

4.12.3.2 Operation Direct and Indirect Effects (Long Term)

There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of implementing Alternative 3. No environmental justice impacts would be expected.

4.12.4 Alternative 4 - Dual Access Road Alternative

4.12.4.1 Construction Direct and Indirect Effects (Short Term)

Approximately 3.02 acres would be disturbed during construction of both road and the utility corridors. There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of implementing Alternative 4. No environmental justice impacts would be expected.

4.12.4.2 Operation Direct and Indirect Effects (Long Term)

There would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations as a result of implementing Alternative 4. No environmental justice impacts would be expected.

4.13 Infrastructure and Utilities

The environmental consequences (impacts and mitigation) to infrastructure and utilities for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and RGNF lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal Regulations. Affects on infrastructure and utilities as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

4.13.1 Alternative 1 – No Action Alternative

4.13.1.1 Construction Direct and Indirect Effects (Short Term)

The maintenance and repair activities on FSR 391 would be performed in accordance with RGNF requirements. The effects of maintenance (e.g., grading of road) would be minimized by utilizing BMPs for stormwater, soil, and sediment. The BMPs would include sediment fence, energy dissipating devices, and use of rip rap and seeding and mulch to stabilize soil, riparian areas, and wetlands.

The RGNF will require a Road Use Permit to authorize the level of traffic on the road. A stipulation of the permit will require the private property owner to pay for maintenance and to monitor impacts to the road. The USFS will inspect the road on a semi-annual basis (e.g., spring and fall) to confirm the condition of the road.

4.13.1.2 Operation Direct and Indirect Effects (Long Term)

FSR 391 would continue to serve as the only access road to the private property; therefore, there would be no additional effects from maintenance and repairs to FSR 391 from Highway 160 to the private property. No additional effects are anticipated since maintenance of FSR 391 would be within the NFS easement and would continue to be the only connecting road from Highway 160 through the private property to Alberta Lake.

4.13.2 Alternative 2 – Proposed Action

4.13.2.1 Construction Direct and Indirect Effects (Short Term)

The access road and associated utility construction effects would result from earthwork. Approximately 1.65 acres would be disturbed. Construction activities that may hinder access to Tranquility Road and to the Tranquility Road parking area would be scheduled to minimize impacts to the Ski Area. Tranquility Road is currently permitted for use by the Ski Area. Construction effects from earthwork would be minimized by utilizing BMPs for stormwater, soil, and sediment and blasting control, including those of the RGNF. The BMPs would include sediment fence, energy dissipating devices, and use of rip rap and seeding and mulch to stabilize soil, riparian areas, and wetlands. The road would have a paved surface, permitting all-weather and year-round access.

4.13.2.2 *Operation Direct and Indirect Effects (Long Term)*

The access road with the associated utility corridors would be utilized indefinitely and would require annual and periodic maintenance. The access road would require ROW maintenance for vegetation (grass and or tree trimming), storm drain debris removal, road painting, and patching and resurfacing periodically. The utility corridors would be maintained along with the access road since they are adjacent to the access road easement. Utility corridor #3 would require periodic vegetation trimming (woody vegetation) to prevent subsurface impact to the utilities from vegetation or unwanted excavation.

The maintenance, repair, or upgrade activities on the access road or utility corridors would be performed in accordance with the RGNF requirements. In addition, the effects of maintenance (e.g., earthwork) would be minimized by utilizing BMPs for stormwater, soil, and sediment and blasting control, including those of the RGNF as described above.

4.13.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

4.13.3.1 *Construction Direct and Indirect Effects (Short Term)*

The access road with the associated waterbody crossings and utility corridor construction, and utility installation would disturb approximately 2.98 acres. Access road and associated utility construction direct effects would result from earthwork. Construction effects from earthwork would be minimized by utilizing BMPs and in accordance with RGNF construction guidelines for stormwater, soil, and sediment and blasting control. The BMPs would include sediment fence, energy dissipating devices, and use of rip rap and seeding and mulch to stabilize soil, riparian areas, and wetlands. The road would have a paved surface permitting all-weather, year-round access. No additional direct effects are anticipated.

The access road and associated utility construction indirect effects to off-easement vegetation, and soil and water resources would be minimized by utilizing BMPs for stormwater, soil, sediment, and blasting control including those of the RGNF as described above. No additional indirect effects are anticipated.

4.13.3.2 *Operation Direct and Indirect Effects (Long Term)*

The access road would require ROW maintenance for vegetation (grass and or tree trimming), storm drain debris removal, road painting, patching, and resurfacing periodically. Each of the utility corridors adjacent to the access road would be maintained along with the access road since they are in the same corridor. Utility corridor #3 would require maintenance.

The maintenance, repair or upgrade activities on the access road or utility corridors would be performed in accordance with the RGNF easement requirements. In addition, the effects of maintenance (earthwork) would be minimized by utilizing BMPs for stormwater, soil, and sediment and blasting control including those of the RGNF.

The direct effects of the alternative would be less than those described in Alternative 2 because of the shorter distances, 1,500 feet versus 2,350 feet, of the access road and the adjacent utility

corridors. Therefore, the road surface maintenance would be slightly less than that of Alternative 2.

4.13.4 Alternative 4 – Dual Access Road Alternative

Alternative 4 would combine Alternatives 2 and the first 750 feet of Alternative 3, resulting in the withdrawal of land for the two road ROWs as discussed above. Each road easement would have two adjacent 10-foot utility corridors adjacent to the ROWs. Also included in this alternative is the additional 10-foot wide 1,000-foot long utility corridor (also discussed above).

4.13.4.1 Construction Direct and Indirect Effects (Short Term)

The access roads with the associated waterbody crossings and utility corridor construction, and utility installation would disturb approximately 3.02 acres. Access road and associated utility construction direct effects would result from earthwork. Construction effects from earthwork would be minimized by utilizing BMPs and in accordance with RGNF construction guidelines for stormwater, soil, and sediment and blasting control. The BMPs would include sediment fence, energy dissipating devices, and use of rip rap and seeding and mulch to stabilize soil, riparian areas, and wetlands. The roads would have a gravel surface permitting all-weather, year-round access. No additional direct effects are anticipated.

The access roads and associated utility construction indirect effects to off-easement vegetation, and soil and water resources would be minimized by utilizing BMPs for stormwater, soil, sediment, and blasting control including those of the RGNF as described above. No additional indirect effects are anticipated.

4.13.4.2 Operation Direct and Indirect Effects (Long Term)

The access roads would require ROW maintenance for vegetation (grass and or tree trimming), storm drain debris removal, road painting, patching, and resurfacing periodically. Each of the utility corridors adjacent to the access roads would be maintained along with the access roads since they are in the same corridor. The stand alone utility corridor would require maintenance.

The maintenance, repair or upgrade activities on the access roads or utility corridors would be performed in accordance with the RGNF easement requirements. In addition, the effects of maintenance (earthwork) would be minimized by utilizing BMPs for stormwater, soil, sediment and blasting control including those of the RGNF as described above.

The direct effects of the alternative would be more than those described in Alternative 2 because of the longer distances of the access roads and the adjacent utility corridors. Therefore, the road surface maintenance would be slightly more than that of Alternative 2.

4.14 GEOLOGY, SOILS AND MINERALS

The environmental consequences (impacts and mitigation) to geology and soils for the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Although several specific and applicable standards used for the evaluation are summarized in Table 4.14-1, all applicable standards and guidelines will be implemented. Note that this is a partial list of standards reflecting only applicable geology and soil considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal regulations. Affects on geology and soils as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

Table 4.14-1. Applicable Standards for Federal Action

Parameter	Standard
General	Reclamation will be considered satisfactory when the disturbed area has been reclaimed in accordance with operating plan requirements, and desired vegetative conditions have been achieved.
Soil Productivity	Manage land treatments to limit the sum of severely burned and detrimentally compacted, eroded, and displaced land to no more than 15% of any land unit (FSH 2509.18).

Source: USFS 1996a.

4.14.1 Alternative 1 – No Action Alternative

4.14.1.1 Construction Direct and Indirect Effects (Short Term)

Under the No Action Alternative, existing conditions would continue. Consequently, no short-term impacts are anticipated.

4.14.1.2 Operation Direct and Indirect Effects (Long Term)

Under the No Action Alternative, existing conditions would continue. Consequently, no long-term impacts are anticipated.

4.14.2 Alternative 2 – Proposed Action

4.14.2.1 Construction Direct and Indirect Effects (Short Term)

Construction of this alternative would have a minor impact on soil resources. The impacts would be limited to the ROW/utility corridors mitigated by implementing best management practices and USFS implemented soil and water protection standards and guidelines. Construction of the road will be through Leighcan-Endlich soils (USFS 1996a). In their undisturbed state, these soils have a moderate erosion potential. Because of their loamy texture these soils would be susceptible to erosion during construction. Erosion during construction can lead to deposition of sediment in downstream areas. Use of silt fences directly adjacent to the construction area, straw bails, slash filter windrows, and/or other best management practices/USFS implemented soil and water protection standards and guidelines would be required during construction. Geotechnical stability of the slopes for road and utility corridor construction would have to be evaluated on a site-specific basis. Engineering controls, such as retaining walls, may be necessary to stabilize slopes above or below the road. The transport of dust would be an issue for this alternative. Consequently, water trucks should be used to control dust. Reclamation using a RGNF seed prescription, weed-free seeds, and mulches will be performed under the RGNF 1996 Forest Plan.

The Water Erosion Protection Project (WEPP) Model was used to estimate soil erosion by length of road and utility corridor associated with this alternative. The WEPP Model predicts an insignificant amount of sediment leaving buffers with soil and water protection standards and guidelines in place.

Any culvert crossing the roads should be constructed to minimize erosion and transport of sediment. Sediment control structures, such as energy dissipaters and drop inlets, should be utilized when constructing culverts. Additional mitigation measures would include road cross drains, rolling water dips, etc., as outlined in the RGNF 1996 Forest Plan.

4.14.2.2 *Operation Direct and Indirect Effects (Long Term)*

The road and utility corridors must be designed and built in accordance with USFS standards and guidelines to minimize long-term effects on geology and soils within the road and utility corridors.

The operation of the road and utility corridor would require long-term maintenance to control erosion of the disturbed soils and sedimentation in downstream areas. Maintenance activities would be limited to the ROW/easement area/slash filter windows adjacent to the road may have to be maintained for several years (5 to 10) until vegetation is well established. Borrow ditches would likely require treatment with riprap or other engineering controls to mitigate erosion over the long-term. Weed-free wattles would be used below cross drains to limit soil compaction. Rockfalls and erosion of uphill slopes would occur and would be addressed by regular maintenance. Sediment accumulating in sediment control structures, such as drop inlets and energy dissipaters, would have to be removed on a regular basis to protect downstream receiving waters. Mowing where appropriate would take place only within the ROW/easement area. Grass seeding where appropriate would be maintained to mitigate possible effects.

The Utility Corridor 3 would require long-term maintenance (5 to 10 years) to restore vegetation. Log terraces would likely be required on the Utility 3 corridor.

4.14.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

4.14.3.1 *Construction Direct and Indirect Effects (Short Term)*

Construction of this alternative would be through two soils types: Leighcan-Endlich and Cryohemists-Cryaquolls. The bulk of the road would be constructed through Leighcan-Endlich soils. The construction concerns for this soil are similar to those described above in Alternative 2. The lower portion of the road (approximately 100 to 200 feet) would be constructed through the Cryohemists-Cryaquolls soils. The Cryohemists-Cryaquolls soils are characterized by a high organic content and may have a silt and clay texture. The water table is typically 0.5 feet to 1.5 feet below the surface in these soils. Construction through this type of soil would require over-excavation and removal of the upper 2 to 6 feet of soils and backfilling with a well draining material to build a suitable subgrade for the road. Consequently, groundwater would be encountered and a dewatering permit would be required for construction. Furthermore, dewatering would require handling of sediment laden water. The discharge of this water would have to be approved and managed by a permit issued by the State of Colorado and in accordance with USFS standards and guidelines. Other short-term effects would be similar to those in Alternative 2.

The WEPP Model was used to estimate soil erosion by length of road and utility corridor associated with this alternative. The WEPP Model predicts an insignificant amount of sediment leaving buffers with soil and water protection standards and guidelines in place.

4.14.3.2 *Operation Direct and Indirect Effects (Long Term)*

As in the case of Alternative 2, the roads and utility corridors would be maintained in conformance with USFS standards and guidelines to mitigate effects. However, the long-term effects of this alternative are somewhat more complicated than Alternative 2 because of the Cryohemists-Cryaquolls soils. The water table would be intercepted by the construction in the area of these soils. Special provisions in the design of the roads and utilities would have to be made to maintain the historic flow path of the groundwater. For example, changes in the hydrogeologic regime, either too wet or too dry, (higher or lower water table) could adversely effect the soil resources. Road and ROW/utility corridor maintenance would be performed within the withdrawal area and in accordance with USFS standards and guidelines. The WEPP Model predicts an insignificant amount of sediment leaving buffers with soil and water protection standards and guidelines in place.

4.14.4 *Alternative 4 – Dual Access Road Alternative*

4.14.4.1 *Construction Direct and Indirect Effects (Short Term)*

The short-term effects of this alternative are discussed in Alternatives 2 and 3. BMPs utilizing USFS standards and guidelines would have to be employed to mitigate the impacts. Site-specific soil studies would be performed prior to constructing this alternative.

The WEPP Model was used to estimate soil erosion by length of road and utility corridor associated with this alternative. The WEPP Model predicts an insignificant amount of sediment leaving buffers with soil and water protection standards and guidelines in place.

4.14.4.2 *Operation Direct and Indirect Effects (Long Term)*

The long-term effects of this alternative on geology and soils are similar to the effects of Alternatives 2 and 3. In summary, the long-term effects would be mitigated with the use of BMPs and USFS standards and guidelines to re-establish vegetation, and control erosion and sediment transport. The WEPP Model predicts an insignificant amount of sediment leaving buffers with soil and water protection standards and guidelines in place.

4.15 AIR QUALITY AND NOISE ENVIRONMENT

This section discusses the potential effects on air quality and noise associated with the construction and operation of the Proposed Action and alternatives. The environmental consequences (impacts and mitigation) to air resources from the Federal action are evaluated based on the Forest Plan standards and guidelines (USFS 1996a). Specific and applicable standards used for evaluation are summarized in Table 4.15-1. Note that this is a partial list of standards reflecting only applicable air quality considerations. A complete list of standards and guidelines is available in the Forest Plan. These standards are being applied only to the Federal action and NFS lands. Development on private lands is regulated by applicable Mineral County codes, and applicable state and Federal regulations. Affects on air resources as a result of reasonable foreseeable future actions on the private property are discussed in Section 4.19, Cumulative Impacts.

Table 4.15-1. Applicable Standards for Federal Action

Parameter	Standard
Air Resources	Conduct all land management activities in such a manner as to comply with all applicable Federal, state, and local air quality standards and regulations, including: <ul style="list-style-type: none"> • Federal: <i>Clean Air Act</i>, as amended, 1991, (P.L. 95-95) • State of Colorado: <i>Colorado Air Quality Control Act</i>, Colorado Statutes 25-7-101 through 25-7-505

Source: USFS 1996a.

4.15.1 Alternative 1 – No Action Alternative

4.15.1.1 Construction Direct and Indirect Effects (Short Term)

Air Quality

Under the No Action Alternative, existing conditions would continue. FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Road improvements, upgrades, and winter access would not be allowed. Because there would be no construction, no related air quality impacts are anticipated.

Noise

Under the No Action Alternative, existing conditions would continue. FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Because there would be no construction, no related noise impacts are anticipated.

4.15.1.2 *Operation Direct and Indirect Effects (Long Term)*

Air Quality

FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Impacts associated with the use of FSR 391 for site access to recreational areas and the private property would consist of fugitive dust and combustion exhaust emissions from vehicles. Fugitive dust emissions would result from dust stirred up during travel on unpaved surfaces and from periodic road maintenance activities such as grading. Over time, seasonal impacts associated with use of FSR 391 for access to Alberta Lake would increase as more recreational users visit the area. Any incidental emissions that enter Class I areas from increased vehicle traffic would not be enough to violate air quality standards.

Noise

FSR 391 would continue to serve as access to the private property as well as provide public access through the private property to Alberta Lake. Impacts associated with the use of FSR 391 for site access to the private property would consist of noise from vehicles traveling on unpaved surfaces, periodic road maintenance (grading), and outdoor recreation activities. Over time, impacts associated with use of FSR 391 for access to Alberta Lake would increase as more recreational users visit the area.

4.15.2 *Alternative 2 – Proposed Action*

4.15.2.1 *Construction Direct and Indirect Effects (Short Term)*

Air Quality

Construction impacts associated with the Proposed Action would consist of fugitive dust and combustion exhaust emissions from construction equipment and vehicles. Approximately 1.65 acres of land would be disturbed. Fugitive dust emissions would result from dust stirred up during site preparation, onsite travel on unpaved surfaces, and during aggregate and soil loading and unloading operations. Wind erosion of disturbed areas could also contribute to fugitive dust. Actual quantities of emissions depend on the extent and nature of clearing operations, the type of equipment employed, the physical characteristics of the underlying soil, the speed at which construction vehicles are operated, and the type of fugitive dust control methods employed.

The EPA has suggested an overall emission rate of about 1.2 tons per month of particulate emissions from active construction from all phases of land-clearing operations before accounting

for fugitive dust control measures. Therefore, approximately 5.5 tons per month of particulate emissions could be expected during construction of the Proposed Action. However, this estimate is based on a national emission factor and actual project emissions would vary widely depending on factors such as the intensity and type of land-clearing operations, type of soils, and site geology. Much of the fugitive dust generated by construction activities consists of relatively large-sized particles, which are expected to settle within a short distance from the construction site and would have a minimal impact on nearby receptors.

Combustion emissions would result from diesel-fired construction equipment, various diesel-fueled trucks, diesel-powered equipment (e.g., welding machines, electric generators, air compressors, water pumps), and vehicle emissions from trucks delivering construction materials or removing debris, workers' private vehicles, and construction equipment operation.

Construction emissions would be of a temporary nature and would be mitigated by use of BMPs to control fugitive dust and other incidental emissions. Water, or a dust suppressant, would be applied to all disturbed areas and soil storage piles as necessary to minimize fugitive dust.

Noise

During construction, noise would be generated by the operation of heavy equipment, blasting, and worker vehicles. Construction-generated noise, however, would be temporary and would not require long-term mitigation.

Typical equipment used for construction includes compactors, front loaders, backhoes, scrapers, graders, pavers, trucks, and cranes. Table 4.15-2 identifies typical noise levels generated by various types of construction equipment. The noise levels associated with these types of equipment range from approximately 73 dB to 102 dB at a distance of 50 feet from the source. The noise levels vary for individual pieces of equipment, which may come in different sizes and with different engines. During a typical workday, equipment would be used at many places on the site. Grading operation noise is generally cyclical, with machines moving from one part of the site to another. There would be a variety of operations, many not involving heavy equipment. Construction noise levels may reach 90 dBA to 110 dBA at a distance of 50 feet from the equipment, for short periods during site preparation and grading. Average hourly noise levels during grading may be 80 dBA to 90 dBA at a distance of 50 feet. The 12-hour average noise level from 7 a.m. to 7 p.m., assuming 8 hours of work, would likely not exceed 73 dBA, at a distance of 50 feet.

Although noise levels in the construction area could be as high as 110 dBA, these high local noise levels would not extend far beyond the project site. As shown in Table 4.15-2, noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 85 dBA measured at 50 feet from the noise source to the receptor would be reduced to 79 dBA at 100 feet from the source to the

receptor, and reduced by another 6 dBA to 73 dBA at a distance of 200 feet from the source to the receptor. Noise is not considered to be a significant impact because it would be temporary during the construction period and noise decreases with distance.

**Table 4.15-2. Peak and Attenuated Noise (in dBA)
Levels Expected from Operation of Construction Equipment**

Source	Noise Level (peak)	Distance from Source			
		50 feet	100 feet	200 feet	400 feet
Heavy trucks	95	84-89	78-83	72-77	66-71
Dump trucks	108	88	82	76	70
Concrete mixer	105	85	79	73	67
Jackhammer	108	88	82	76	70
Scraper	93	80-89	74-82	68-77	60-71
Dozer	107	87-102	81-96	75-90	69-84
Generator	96	76	70	64	58
Crane	104	75-88	69-82	63-76	55-70
Loader	104	73-86	67-80	61-74	55-68
Grader	108	88-91	82-85	76-79	70-73
Dragline	105	85	79	73	67
Pile driver	105	95	89	83	77
Fork lift	100	95	89	83	77

Source: Golden et al. 1980.

4.15.2.2 *Operation Direct and Indirect Effects (Long Term)*

Air Quality

Impacts associated with the Proposed Action would include a reduction in fugitive dust emissions due to the use of an all-weather road for access to the private property and the Alberta Lake area. However, combustion exhaust emissions from vehicles would increase due to year-round access to Alberta Lake and the private property. Over time, impacts associated with the Proposed Action would increase as more recreational users visit the area. Any incidental emissions that enter Class I areas from increased vehicle traffic would not be enough to violate air quality standards.

Noise

Road development and utility corridors would be associated with some minor increases in ambient traffic noise. Access improvements would result in increased human visitation and long-term localized minor increases in ambient noise levels.

4.15.3 Alternative 3 – Snow Shed - East Village Access Alternative

4.15.3.1 Construction Direct and Indirect Effects (Short Term)

Air Quality

Construction impacts would consist of fugitive dust and combustion exhaust emissions from construction equipment and vehicles. Under Alternative 3, approximately 2.98 acres would be disturbed. Emission sources would be the same as those described in Alternative 2. Approximately 3.6 tons per month of particulate emissions could be expected as result of construction. However, this estimate is based on a national emission factor; actual project emissions would vary widely depending on factors such as the intensity and type of land-clearing operations, type of soils, and site geology. Much of the fugitive dust generated by construction activities consists of relatively large-sized particles, which are expected to settle within a short distance of the construction site and would have a minimal impact on nearby receptors.

These emissions would be of a temporary nature and would be mitigated by use of BMPs to control fugitive dust and other incidental emissions.

Noise

Under Alternative 3, construction impacts would be the similar to those associated with the Proposed Action. Noise would be generated by the operation of heavy equipment, blasting, and worker vehicles; however, construction-generated noise would be temporary and would not require long-term mitigation. Noise is not considered to be a significant impact because it would be temporary during the construction period and noise decreases with distance.

4.15.3.2 Operation Direct and Indirect Effects (Long Term)

Air Quality

Under Alternative 3, long-term impacts would be the same as those associated with the Proposed Action. Impacts associated with the Proposed Action would include a reduction in fugitive dust emissions due to the use of an all-weather road for access to the private property and the Alberta Lake area. However, combustion exhaust emissions from vehicles would increase due to year-round access to Alberta Lake and the private property. Over time, impacts associated with the Proposed Action would increase as more recreational users visit the area. Any incidental emissions that enter Class I areas from increased vehicle traffic would not be enough to violate air quality standards.

Noise

Under this alternative, long-term impacts would be the same as those associated with the Proposed Action. Road development and utility corridors would be associated with some minor increases in ambient traffic noise. Access road improvements would result in increased human visitation and long-term localized minor increases in ambient noise levels.

4.15.4 Alternative 4 – Dual Access Road Alternative

Under the Dual Access Road Alternative, the Applicant would be granted road and utility corridors to access the private property over NFS lands. As described in Chapter 2, this alternative would combine Alternative 2 and a variation of Alternative 3.

4.15.4.1 Construction Direct and Indirect Effects (Short Term)

Air Quality

Construction impacts would consist of fugitive dust and combustion exhaust emissions from construction equipment and vehicles. Approximately 3.02 acres of NFS land would be disturbed. Emission sources would be the same as those described in Alternative 2. Approximately 7.1 tons per month of particulate emissions could be expected as result of construction. However, this estimate is based on a national emission factor and actual construction emissions would vary widely depending on factors such as the intensity and type of land-clearing operations, type of soils, and site geology. Much of the fugitive dust generated by construction activities consists of relatively large-sized particles, which are expected to settle within a short distance of the construction site and would have a minimal impact on nearby receptors.

These emissions would be of a temporary nature, and would be mitigated by use of BMPs to control fugitive dust and other incidental emissions.

Noise

Under this alternative, construction impacts would be the same as those associated with the Proposed Action. Noise would be generated by the operation of heavy equipment, blasting, and worker vehicles. Construction-generated noise would be temporary and would not require long-term mitigation. Because noise decreases significantly with distance, noise is not considered to be a significant impact.

4.15.4.2 *Operation Direct and Indirect Effects (Long Term)*

Air Quality

Long-term impacts of this alternative would be the same as those associated with the Proposed Action. Impacts associated with the Proposed Action would include a reduction in fugitive dust emissions due to the use of an all-weather road for access to the private property and the Alberta Lake area. However, combustion exhaust emissions from vehicles would increase due to year-round access to Alberta Lake and the private property. Over time, impacts associated with the Proposed Action would increase as more recreational users visit the area. Any incidental emissions that enter Class I areas from increased vehicle traffic would not be enough to violate air quality standards.

Noise

Long-term impacts of this alternative would be the same as those associated with the Proposed Action. Road development and utility corridors would be associated with some minor increases in ambient traffic noise. Access improvements would result in increased human visitation and long-term localized minor increases in ambient noise levels.

4.16 UNAVOIDABLE ADVERSE IMPACTS

Implementing any of the action alternatives analyzed in this EIS would result in some unavoidable adverse impacts on the NFS environment. Generally, these impacts would be short term and minor as a result of construction of the access roads and utility corridors. Depending upon the action alternative, approximately 1.65 to 3.02 acres of NFS land would be disturbed during construction. Following construction, roads and utility corridors would be revegetated. Although there would be a 2-year natural rehabilitation period, it is unlikely that the land would return to a state that would appear completely unaltered. This would still meet the “High” SIO.

Most wildlife within construction impact areas (e.g., roads) would be displaced from the construction area and zone of influence during the construction period, as the former habitat values of those areas are lost or altered. Some less mobile wildlife, such as small mammals and nesting birds, within construction zones could be killed by development activities, depending on when construction seasonally occurred. Forest perforation would have a minor affect on forest interior species while slightly benefiting edge species and wildlife generalists. However, it is not likely to result in a loss of any species viability on the planning area.

Implementing any action alternative would have minimal impacts on water resources. Impacts to soils would be minor and BMPs would be employed to mitigate erosion and minimize runoff of sediment.

The Federal action would have a minimal impact on air quality. However, there would be temporary and localized effects on air quality from associated construction and excavation activities. There would also be temporary impacts from the construction, including increased fugitive dust, increased potential for erosion and stormwater pollution, and increased construction vehicle traffic and emissions.

4.17 IRREVERSIBLE AND IRRETRIEVABLE RESOURCE COMMITMENTS

This section describes the irreversible and irretrievable commitments of resources associated with implementation of the Proposed Action or alternatives. An irreversible commitment is when primary or secondary impacts limit future options for a resource. An irreversible commitment applies primarily to the effects of nonrenewable resources, such as minerals, cultural resources, or soil productivity, that are renewable only over long periods of time. An irretrievable commitment refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. An irretrievable commitment applies to the loss of production, harvest, or use of natural resources (USFS 1992).

Both irreversible and irretrievable resource commitments would occur under the Proposed Action and alternatives. An irreversible commitment of land, approximately 1.65 to 3.02 acres, depending upon the alternative selected, and visual resources would impact the RGNF where relatively undisturbed land would be disturbed by the proposed project. All alternatives pass through areas with high public value. The proposed project would introduce human alterations to the natural landscape in areas with currently “High” or “Very High” Scenic Integrity, areas where the landscape is intact, or appears to be intact, with only minute deviations. Each road or utility corridor would be visible from a number of recreational areas. These special use areas represent recreational opportunities where visitors likely have high concern for the landscape. Following construction, roads and utility corridors would be re-vegetated. Although the land would likely not return to a state that would appear unaltered, it would still meet the “High” SIO.

Construction of the access roads and utility corridors would have irretrievable and irreversible impacts on soils, vegetation, hydrology, and possibly cultural resources. Irreversible commitments of resources would include removal of small areas of land, approximately 1.65 to 3.02 acres, depending upon the action alternative selected; however, only the land directly beneath the foundations of the new roads or utility corridors would be irreversibly committed. The loss of soil and productivity would be irreversible where roads and utility corridors are constructed.

The direct loss of vegetation due to clearing and construction is irretrievable, but it could be reduced by application of conservation measures or revegetation. Specific impacts to vegetation would be identified and mitigated upon precise siting of the access roads and utility corridors.

Long-term consequences of changing the hydrology of the watershed and trampling are irreversible and irretrievable although minimal.

Cultural resources are nonrenewable. Disturbance of a site is an irretrievable commitment to that resource. Preservation of archaeological sites is possible through cultural resource site avoidance. Data recovery of historic properties eligible for the NRHP may be a necessary

mitigation measure; however, data recovery is an irreversible use of an historical property, effectively eliminating options for future preservation or study.

Construction of the access roads and utility corridors would require the irretrievable commitment of standard building materials and fuel for construction equipment. The resources irretrievably committed for operation of this project would be relatively minor quantities of fuel for maintenance vehicles, operating supplies, and miscellaneous chemicals. Theoretically, construction of the access roads and utility corridors are a reversible commitment of land and water. In practice, it is an irretrievable commitment of land use, as the access roads and utility corridors would not be removed.

4.18 RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

This section discusses the proposed project's short-term use of man's environment and the maintenance and enhancement of long-term productivity. The impacts and utilization of resources associated with the proposed project are discussed in this chapter.

Although the alternatives require only a minor amount of land, approximately 1.65 to 3.02 acres, depending upon the alternative, losses of terrestrial plants, animals, and habitats from natural productivity to accommodate the new roads and utility corridor, and temporary disturbances during construction are possible. Land clearing and construction activities resulting in personnel and equipment moving about an area would disperse wildlife and temporarily eliminate habitats. Short-term disturbances of previously undisturbed biological habitats from the construction of the roads and utility corridor could cause long-term reductions in the biological productivity of an area. With respect to the RGNF ecosystem as a whole, these impacts are expected to be minor, as the disturbed acreage represents much less than 1 percent of the RGNF ecosystem. No critical habitats would be impacted. Changes in types and patterns of recreational use can be positive or negative, depending on the personal values of the public.

The proposed project's impacts on undisturbed land within the RGNF would affect long-term recreational and scenic resources. A portion of each alternative crosses undeveloped land, impacting long-term preservation of unaltered landscapes.

4.19 CUMULATIVE IMPACTS

The CEQ regulations implementing NEPA define cumulative effects as “the impact on the environment which results from the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). The regulations further explain “cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.” Other Federal, state, and local development programs all have the potential to contribute to cumulative effects within the NFS. This section analyzes the potential cumulative impacts of other reasonably foreseeable actions that may affect the RGNF and are pertinent to the Federal decision(s) to be made regarding this EIS.

4.19.1 Reasonable and Foreseeable Actions

In addition to the Federal action that is the subject of this EIS, the USFS identified the following reasonably foreseeable actions in the vicinity of the Ski Area and Wolf Creek Pass that may affect the RGNF:

- Development of the Applicant’s private property into the Village.
- Ongoing Ski Area Operations.
- Potential expansion of the Ski Area consistent with the MDP (WCSC 1998). The MDP of 1998 states that the “Wolf Creek Ski Area has a general agreement with the Leavell-McCombs joint venture that upon breaking ground for housing/hotels, appropriate additional ski lifts would be constructed,” and that development of the Village would require the preparation of “considerable additions or amendment to this plan” (WCSC 1998). The construction of the eight new lifts identified is partially dependent upon Village construction and availability of a major power supply (WCSC 1998).
- Saddlebrook, a planned residential community, is located approximately 12 miles east of the Ski Area on the south side of Highway 160 in Moon Valley. This residential community is currently being marketed, but no development has taken place as construction activities associated with the widening of Highway 160 are occurring. This residential development would have cumulative construction and operational impacts on the Wolf Creek Pass region, as well as transportation and traffic impacts.
- An adventure race associated with the Continental Divide Trail is planned for the Ski Area vicinity for late summer 2004. This race is permitted by the USFS. This may or may not be a reoccurring annual event.
- The Pass Creek Yurt is located approximately 2 miles east of Alberta Lake, reached via FSR 391. The Pass Creek Yurt is a USFS permitted user fee lodging facility for non-motorized winter recreation. An additional yurt has been permitted by the USFS approximately 3.5 miles southeast of Alberta Lake. This yurt has yet to be sited but would serve the same non-motorized recreation purpose as the Pass Creek Yurt.

- The Million Fire Timber Salvage Project is located in the South Fork area. The project will salvage approximately 550 acres of fire-killed timber.
- The Shaw Lake Vegetation Management Project is located approximately 18 miles southwest of South Fork. The Shaw Lake Vegetation Management Project is a 241-acre sanitation/salvage timber sale project to treat a spruce beetle infestation which has occurred over the past two years. Proposed treatments include salvage harvest of dead trees and the removal of currently infested trees that are still alive but dying. The removal of currently infested trees would be designed to reduce the spruce beetle population in the area and removal of dead trees would reduce the fuel loading. This proposal requires no new road construction; existing roads would be utilized and maintained.
- The Handkerchief Mesa Timber Project in the Fox Mountain Area consists of three separate issues: (1) Vegetative Treatments - implement silvicultural prescriptions on 5,094 acres; (2) Travel Management decisions concerning road closures and reconstruction of roads; (3) Boundary Change - Amend the Forest Plan to change 1,423 acres to Management Area Prescription- Dispersed Recreation for consistency with the Fox Management Area.
- Construction activities associated with CDOT improvements to Highway 160 continue on the east and west sides of Wolf Creek Pass, with construction on the east side of Wolf Creek Pass between approximately Mileposts 170 to 178. Blasting is presently occurring in the Fun Valley section of Highway 160 creating delays in both eastbound and westbound travel. These delays are approximately 30 minutes to 1 hour. Current construction activity on Highway 160 results in 4 traffic stoppages (delays). Highway 160 construction activity is expected through 2007. In addition, CDOT has numerous lynx corridor mitigation projects that are scheduled as part of Highway 160 construction.
- CDOT maintains an automated weather station at the top of Wolf Creek Pass (approximately 250 feet north of Highway 160). CDOT has proposed moving this weather station approximately 0.33 mile north of the Ski Area on the east side of the Highway 160 corridor. The USFS requires special use authorization and permitting for the proposed weather station siting.
- CDOT maintains a maintenance facility directly north of the Ski Area on the northern side of Highway 160.
- Historic hazardous material spills are monitored with well locations approximately 0.25 mile northeast of the Ski Area on the south side of Highway 160.
- The Ski Area assists CDOT with explosive work above the Snowshed. In addition, the Ski Area uses explosives for avalanche control within the Ski Area boundary.

After reviewing these potential actions, it became clear that the Applicant's private property development of the Village (and the associated expansion of the Ski Area) would be the most significant actions contributing to cumulative impacts. In terms of scale, these two projects have the potential to cause even greater impacts than the Federal actions. In terms of proximity, these two actions, which are within the RGNF, would have the greatest contribution to cumulative

impacts compared to any other reasonably foreseeable cumulative actions. The potential contribution to impacts associated with the adventure race, an additional yurt, timber salvage in the South Fork area, the Shaw Lake Vegetation Management Project, the Handkerchief Mesa Timber Project, relocating the automated weather station, operation of the CDOT maintenance facility, and avalanche control operations were deemed to be insignificant compared to the potential contribution to impacts from the Village and Ski Area expansion. Two other reasonably foreseeable actions-- the residential development at Saddlebrook and the CDOT improvements to Highway 160—are also included in this cumulative assessment because of the potential cumulative impacts related to animals and traffic/transportation. As such, this section focuses on the cumulative impacts associated with the Federal action, the Village development, the associated expansion of the Ski Area, the residential development at Saddlebrook, and the CDOT improvements to Highway 160. Cumulative impacts are presented for those resource areas having the potential to present a significant impact. For purposes of this analysis, it is assumed that the landowners would construct, over a 20-year period, the Village as described in the Application to Mineral County for a PUD on November 29, 1999. It is also assumed that the Ski Area would be expanded consistent with the MDP.

4.19.2 Cumulative Impacts to Resource Areas

4.19.2.1 *Surface Water*

The cumulative impacts to surface water include potential disturbance to wetlands, potential degradation of surface water quality, and potential changes to hydrologic flows. There are approximately 93 acres of shrubby and herbaceous wetlands within the 287.5 acres owned by the Applicant. With respect to these wetlands, the Village currently proposes an approach of avoidance by designing infrastructure (roads, bridges and utilities) around wetlands and streams. In areas where stream and wetland crossings are planned, the Village proposes to either span a bridge over the wetland areas or construct the bridge on piers or piles. In addition utilities would be hung under the bridges as opposed to burying under ground. The Village has agreed to provide the USACE with construction drawings as they progress, for review and comment to insure regulatory compliance (Honts 2004). The USACE has issued a letter stating concurrence with the project applicant relative to the Village's compliance with current regulations (Hannafious 2004). The expansion of the Ski Area would likely be accomplished without impacting any wetlands. In any event, such expansion would comply with USACE permitting requirements.

Offsite effects to wetlands from the Village could occur to the existing riparian corridor and wetlands adjacent to the existing Tranquility Road if Alternative 2 (extension of Tranquility Road) was implemented. Depending upon future traffic volumes, it is possible that additional road access capacity could be required if the Village were developed to full capacity. If this were to happen, either Tranquility Road could be widened or another access route to/from the Village could be constructed. If Tranquility Road were widened further, the road width would likely be extended into areas that include the upper reaches of the north tributary to Pass Creek and a potential wetlands area. This action would be regulated through the Section 404 permit process.

With respect to surface water degradation, any land disturbing activity that totals over 1 acre, in phases or as a whole, must obtain an NPDES permit. Thus, both the Federal action and the

Village development would require NPDES permits including Storm Water Pollution Prevention Plans for construction related activities with appropriate BMPs. The expansion of the Ski Area to add additional lifts would likely disturb more than 1 acre, which would also require a NPDES Permit to be obtained. Under Section 4.6.7 of Resolution No. 00-13 by the Mineral County Board of Commissioners governing development of the Village, a water quality plan for mitigation of construction effects is required. Protection of water quality during and after construction would require a complete erosion and sedimentation control plan. The plan would consist of temporary practices during construction and permanent controls once construction is complete.

The Village would have a Wastewater Treatment Facility with separate intake (raw water pump stations in two locations known as North Diversion and South Diversion), return flow areas within the 287.5 acre private property with associated piping and pumping infrastructure, and raw water storage reservoirs and water tanks for storage. Wastewater would be collected and treated at the Reclamation Pond, a pond of 3 acres surface area and having 65 acre-feet of active capacity. Treated wastewater would be returned to the North Branch at a point ordered by the Water Court to be no more than 10 feet downstream of the intake point for the North Infiltration Gallery. A NPDES permit would be required for the Wastewater Treatment Facility.

Water quality in both unnamed tributaries to Pass Creek would be potentially impacted by the cumulative actions. Wastewater discharge from the Village in combination with surface water pollutants would introduce contaminants of concern. The Colorado Department of Public Health and Environment oversees water quality in state streams. The state has classified Pass Creek for cold-water aquatic life, recreation, water supply and agriculture. At a minimum, the level of water quality necessary to protect such uses “shall be maintained and protected. No further water quality degradation is allowable which would interfere with or become injurious to these uses. The classified uses shall be deemed protected if the narrative and numerical standards are not exceeded.” Thus, through the state’s water quality requirements it is anticipated that water quality would be monitored and, if necessary, mitigated as required to meet state standards.

To maintain stream health in its existing conditions the Village should employ USFS standards and guidelines. In some cases, additional measures and mitigation would be necessary. Contaminants of concern include sediment, soluble organics, petroleum products, metals, and winter maintenance material. Such additional measures could include stormwater detention to offset increased runoff, water quality elements such as sedimentation facilities for the removal of sands and deicing materials, snow staking and snowmelt water treatment plans. Without implementation of additional measures and mitigation, stream health for the two unnamed tributaries and Pass Creek could be adversely affected by the cumulative Village development.

A *Master Drainage Plan* was prepared for full build-out of the proposed Village property (Murfee 2002). The drainage areas are comprised of offsite NFS land, including the Ski Area, and the Village property. The selected points of analysis represent future roadway crossing and confluences of creeks. These locations were selected to aid in the development of drainage-related designs as the Village development proceeds. The results of the hydrographic analysis indicate full development of the Village would result in increases in runoff rates, volumes and velocities due primarily to increased impervious cover and decrease lag times from overland runoff. Without appropriate mitigation storm flows leaving the private property, both tributaries

would have increased peak flows and velocities as compared to existing conditions. Downstream effects from the increased flows would include changes in channel morphology and planform, increase in erosion, and reduced floodplains and wetlands due to incision.

Actions to minimize downstream effects on Pass Creek, wetlands and fens will be addressed through Mineral County plan reviews including USACE Section 404, State of Colorado's 401 and the Storm Water Pollution Prevention Plan/NPDES. Implementation of these actions is expected to result in minimal impacts to surface water and wetlands.

4.19.2.2 *Groundwater*

Regardless of the road access alternative chosen for the Village, there would be potential cumulative impacts to groundwater resources. These effects would be relatively localized within the private property where building foundations or utility excavations intercept groundwater. Where necessary, these effects may be mitigated with the use of groundwater drains to maintain historic groundwater flow paths. The construction of buildings, water tanks, and roads would locally intercept the infiltration of groundwater into the soils. However, this same construction would remove trees and other vegetation that intercepts, and evaporates and transpires potential groundwater recharge. The net change in groundwater is unknown. However, the amount of precipitation that actually reaches the water table under existing conditions is probably on the order of 5 percent of the annual precipitation (Ault and Hesemann 1994). Given the relatively small amount of groundwater recharge and the trade-off of between water lost to evaporation, transpiration, and water intercepted by construction, the net change in groundwater recharge is likely very low. Through the NPDES Permit process and implementation of appropriate mitigation measures, no significant impacts to groundwater quality are expected.

4.19.2.3 *Water Rights and Use*

The right to use water in the State of Colorado is regulated by a system of Water Courts and by the Division of Water Resources under the direction of the State Engineer. Water rights are decreed by the Water Courts and such decrees specify the allowable amount of diversion, point of diversion, type and location of use, priority for use, and other limiting terms and conditions. Water rights are appropriated and administered under the *Doctrine of Prior Appropriation* (often referred to as *first in time, first in right*).

The priority of the use of water rights is determined by the adjudication date and appropriation date, the year in which the application for the right is filed with the Water Court, and the date water is either first put to beneficial use or an intent to do so is announced, respectively. Water rights with earlier adjudication and appropriation dates (*first in time*) enjoy a more senior priority (*first in right*) for the use of water than later appropriations. The earliest appropriations are generally referred to as *senior rights*, and depending on location may not be affected by water shortage except under the most extreme drought conditions. In times of physical shortage, water use by the subordinate junior water rights is curtailed in order to satisfy the higher-ranking senior rights. Junior rights may be *out-of-priority* for parts of every year and for prolonged periods during severe drought.

In order to provide the legal ability to obtain water for use at the Village and Ski Area, the Applicant and the Ski Area applied for and were granted certain water rights by the District Court, Water Division No. 3, State of Colorado (Water Court) in Case No. 87CW7. From a cumulative perspective, operation of the water rights for the Village and Ski Area as described in the decree in Case No. 87CW7 can be made without injury to other vested water rights and there does not appear to be any legal impediment to their use (See Section A.2.3.1 in Appendix A for additional information).

With respect to water use, the proposed development of 287.5 acres at the private property would be a mixed use development of residential (single family, duplex, condominium, apartment, clustered housing), and commercial (hotel and general commercial) uses. The water supply for the Village would be provided by withdrawing water from the North Branch and the South Branch of Pass Creek, via the North Infiltration Gallery and the South Infiltration Gallery to be constructed in the alluvial aquifer of each stream, and via the Village Ditch diverting from unnamed tributaries of Pass Creek. These diversions would be transmitted to sealed raw water storage tanks of approximately 12.5 million gallons total capacity assuming full development of the Village. Raw water stored in the tanks would be treated and distributed for use in the Village and at the Ski Area. The decree in Case No. 87CW7 was based on the proposed development utilizing a pond for raw water storage (the Village Pond). This proposal has subsequently been revised by the project proponents to replace the Village Pond with storage tanks. The revised water use projection is less than contemplated in the Decree in Case No. 87CW7. Therefore, the water rights granted therein would appear to be adequate for the lower water use projection resulting from removal of the Village Pond and its evaporation. However, the purpose of this EIS is not to judge whether the Applicant's water rights would support full development of the Village. If the Applicant's water rights are inadequate for full development, then the Applicant would need to resolve this issue. The expansion of the Ski Area to add additional lifts might necessitate that additional water rights be obtained. The source of such water rights and the quantity are indeterminate at this time.

4.19.2.4 *Vegetation Communities*

It is likely that RGNF habitats adjacent to and downstream of the private property would be affected to some extent by private land development activities. Vegetative communities more sensitive to such disturbances include wetlands and riparian zones associated with local creeks and Alberta Park Reservoir. Adverse effects could result from trampling and overuse, from unintended discharges/runoff (e.g., from roads and other impermeable surfaces, snow storage/plowing, pet waste, chemical spills, equestrian facilities, wastewater effluent, etc.), and from the introduction and spread of weeds. Trampling and overuse effects would be concentrated immediately around the private parcel and along established and volunteer trails and quickly attenuate with increasing distance. Pollutants affecting aquatic and riparian vegetation could extend further offsite, with effects becoming diluted with increasing distance and water volume. Weeds will be introduced and spread, degrading the quality of some of the vegetative communities present. No federally threatened, endangered, proposed, or Region 2 sensitive plant species (see Table 4.4-3) would be affected. It is assumed that all 138 acres of spruce-fir forest on the private parcel would be lost to development. The PDP approved by Mineral County gives no indication of open space to be retained or the location and extent of development areas on single-family, multi-family, or other land use categories. Nevertheless,

some forest would likely be retained. It is also assumed that to maximize ski in-ski out options, none of the 57 acres of existing ski trails extending onto the private parcel would be directly affected by secondary development. Finally, it is assumed that the vast majority of the 93 acres of shrubby and herbaceous wetlands would be restricted from development as part of the CWA 404 permitting process. Mountain grassland represents a small proportion of these 93 acres. It is assumed that most of the mountain grassland would be developed, but it is unclear how much would be lost based to the PDP. As discussed above, private land development activities/effects extending off that parcel could affect vegetative communities on the surrounding Forest.

The expansion of the Ski Area to add additional lifts would require land clearing. Any disturbed land would be seeded with only native seed mix approved by RGNF specialists. Minimal tree clearing would be necessary.

4.19.2.5 *Animal Communities*

The development of the Village would have irreversible cumulative impacts on the local wildlife community, concentrated on the private land and extending, at a lower intensity and frequency, to the most distal reaches of increased dispersed recreation, commuting employees, and transiting guests. Native habitats in impact areas would be converted to more urban values. Most wildlife within construction impact areas (e.g., building footprints, parking areas, roads, equestrian facilities, etc.) would be displaced from the construction area and zone of influence during the construction period, as the former habitat values of those areas are lost or drastically altered. Some less mobile wildlife (e.g., small mammals and nestling birds) within construction zones would be killed by development activities, depending on when construction seasonally occurred. Forest interior species would be permanently displaced from impact areas, while more adaptable edge species would occupy the new habitats. Year-round human use would decrease habitat effectiveness for almost all species in and adjacent to development areas. Nuisance species (raccoons, skunks, bears, foxes, jays, etc.) would increase in abundance and interact with other components of the surrounding wildlife community. Stray pets would kill some vulnerable wildlife species and decrease the habitat effectiveness of others.

With respect to the Ski Area expansion, the addition of new lifts and additional conventional and gladed terrain resulting in tree clearing could adversely affect foraging, denning/nesting, travel, and security values of MIS and R2 sensitive species associated with spruce-fir forests and historically logged areas of sparser tree density. These ecological effects could extend well beyond impact areas. However, for MIS and R2 sensitive species, the associated area of influence would represent a small fraction of the total available habitat on the RGNF and affect a small fraction of the Forest-wide population. Direct, indirect, and cumulative effects of potential Ski Area expansion would likely be insignificant and discountable on the affected MIS' Forest-wide population, habitat distribution, and trend. MIS would remain relatively abundant and widely distributed across the Forest.

Impacts would attenuate beyond the private parcel, but some would be extensive. Significantly greater vehicle use on Highway 160 and other regional highways would increase the number and frequency of road-killed wildlife, and would likely lead to decreased habitat effectiveness and reduced habitat connectivity. Summer use of the ski area would almost certainly increase, discernibly reducing use by some species (e.g., elk and deer), while others (e.g., songbirds) would

be largely unaffected. Increased summer (e.g., hiking, mountain biking, horseback riding, fishing, ATVs, etc.) and winter use (e.g., snowmobiles and Nordic skiing) would also extend beyond the ski area, affecting wildlife in and adjacent to those use areas. Such a large, year-round development at the base of the Ski Area and the commercial (e.g., services), residential (e.g., commuting full time and seasonal employees and their families) and municipal infrastructure required to support it would stimulate similar development on other private parcels along the Highway 160 corridor from Durango to Alamosa, where similar impacts could occur. These additional secondary effects are almost entirely confined to impacts on private lands off the NFS. The principal result of this additional, off site secondary development would be habitat loss, both direct, through habitat conversion, and indirect, through wildlife displacement from human activity areas. This may affect the local distributions of some sensitive wildlife species on private lands off the NFS.

The altered wildlife community would not look like those now associated with the base areas of Vail, Aspen, or Steamboat, because impacts would be concentrated on a relatively small parcel, surrounded by a large area of undeveloped forest. Furthermore, not all of these impacts would be discernable, particularly not to urban-dwelling guests who visit the resort after the fact. However, all the above impacts, and others, have occurred at other Colorado ski resorts and all would likely occur, to some extent, at the Village. A detailed analysis of potential impacts to specific MIS is found in Section A.2.5 of Appendix A.

In summary, notwithstanding the loss of occupied and/or potential habitats for some Region 2 sensitive animal species on the private Village parcel, cumulative effects of the Village development extending onto the surrounding NFS and reducing habitat effectiveness may impact individual Rio Grande cutthroat trout, boreal toads, northern leopard frogs, northern goshawks, northern harriers, boreal owls, three toed woodpeckers, olive-sided flycatchers, American marten, and North American Wolverine. However, it is not likely to result in a loss of viability on the planning area, nor cause a trend to Federal listing or a loss of species viability range-wide. The area affected by the Village development on NFS lands contains an insignificant proportion of the total population and potential range of each of the above species on the Forest. The Village development would have no impact on any other Region 2 animal species on the NFS. The Village development would result in appreciable, year-round increases in vehicular traffic on Highway 160 that would increase lynx highway mortality probabilities and impair landscape connectivity within the designated Wolf Creek Pass Landscape Linkage. This issue is addressed in summary below (along with the Saddlebrook development) and in detail in Section 4.5 as part of the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) consistency analysis, where consideration of cumulative effects is required.

Saddle Brook is a proposed residential community on a 75-acre property (formerly Riverwalk Resort and Spa) located approximately 12.0 miles east of the Ski Area (approximately at milepost 180) along the South Fork of the Rio Grande River, on the south side of Highway 160, opposite Goodnight's Lonesome Dove RV and Cabins and Moon Valley Resort, in Mineral County. Proposed development consists of 11 separate, two-story buildings containing 166 condominium/townhome units and a small inn with 16 rooms. A commercial area is proposed near Highway 160 (ERO Resources 2004). All proposed development would occur within 10 of the approximately 43 acres on the north side of the river. The remainder of the property (33 acres north of the river and 32 acres south of the river) would be left as undeveloped

meadows, lakes, river, riparian forest, and wetlands and retained as designated and de facto open space. Additional herbaceous and willow-dominated wetlands; would be created along the river as part of the proposed development. The development would be accessed from a single entrance off Highway 160. With the exception of an earthen berm separating the proposed residential/commercial development from the Highway corridor, no development has taken place. Full build-out of the Saddle Brook project is expected to occur over the next 5 years (ERO Resources 2004). Construction activities associated with the widening of Highway 160 (USFWS 2003b) are currently occurring adjacent to the property.

The Saddle Brook development is located within the eastern end of the Wolf Creek Pass Lynx Linkage, which was delineated around Highway 160 to help ensure population viability through population connectivity (USFS 2004a). As described in Section 3.5, high-speed, high-volume highways can fragment and restrict lynx habitat use, impair home range effectiveness, and inhibit local and dispersing movements that may lead to reduced habitat connectivity (C. Apps, Parks Canada and BC Environment, pers. comm. June 17, 1998, 1999, S. Alexander, Univ. Calgary, pers. comm. June 17, 1998, USFWS 2000). Such uses may be further impaired along highways by adjacent human developments, including, but not limited to, subdivisions (USFWS 2000). Highways also result in lynx mortality from vehicular collisions, which can be detrimental to small populations (Ruediger et al. 2000).

All traffic generated by Saddle Brook would occur within the designated lynx linkage. Furthermore, one might expect vehicle trip orientation associated with Saddle Brook to vary seasonally, such that during the ski season, more vehicles may be westbound into the linkage as residents and hotel guests visit the Ski Area.

The combination of the Village at Wolf Creek and Saddle Brook developments would make substantial, year-round contributions to Highway 160 traffic projections over Wolf Creek Pass (Figure 4.19-1). Traffic volume could increase significantly. With respect to highway traffic volumes and lynx crossings, Canadian studies suggest that 2,000-3,000 VPD are problematic and $\geq 4,000$ VPD are more serious threats to mortality and habitat fragmentation (Ruediger et al. 2000). The lynx from the 1999 releases who was killed on Highway 160, approximately three miles east of the project area in 2000 (adjacent to Pass Creek Lake; Wait 2004), suggests that existing traffic volumes and patterns are already influencing lynx habitat connectivity across Highway 160, and this corroborates results of the Canadian studies. USFWS (2003) consider it “likely that U.S. 160 over Wolf Creek Pass is already a barrier(/restriction) to lynx movement; and that the highway is avoided by many wildlife species, including lynx, due to its average daily traffic volume alone (2,600 vehicles).” Nevertheless, lynx continue to cross the highway because it bisects large tracts of some of the highest quality lynx habitat in the southern Rockies. Projected 20-year increases in traffic volume through the designated Wolf Creek Pass Landscape Linkage, due to the proposed Village at Wolf Creek and Saddle Brook developments, would result in year-round traffic volumes whose levels are considered serious threats to highway mortality and habitat fragmentation (Ruediger et al. 2000). Increased Highway 160 volumes would be expected to appreciably increase lynx road kill probabilities and impair habitat connectivity.

Appreciable increases in Highway 160 traffic volumes would likely require further Highway 160 upgrades to maintain safety and level of service. Such upgrades would further impair lynx habitat connectivity and increase road kill probabilities. Although the posted speed limit would

not likely change after highway upgrading, a wider, straighter highway would allow drivers to travel at higher speeds. Wider highways, with more guardrails, perhaps center dividers, and longer cliffs along the north side of the highway, would likely result in greater lynx residency time on the road, further increasing road kill potential and discouraging crossings.

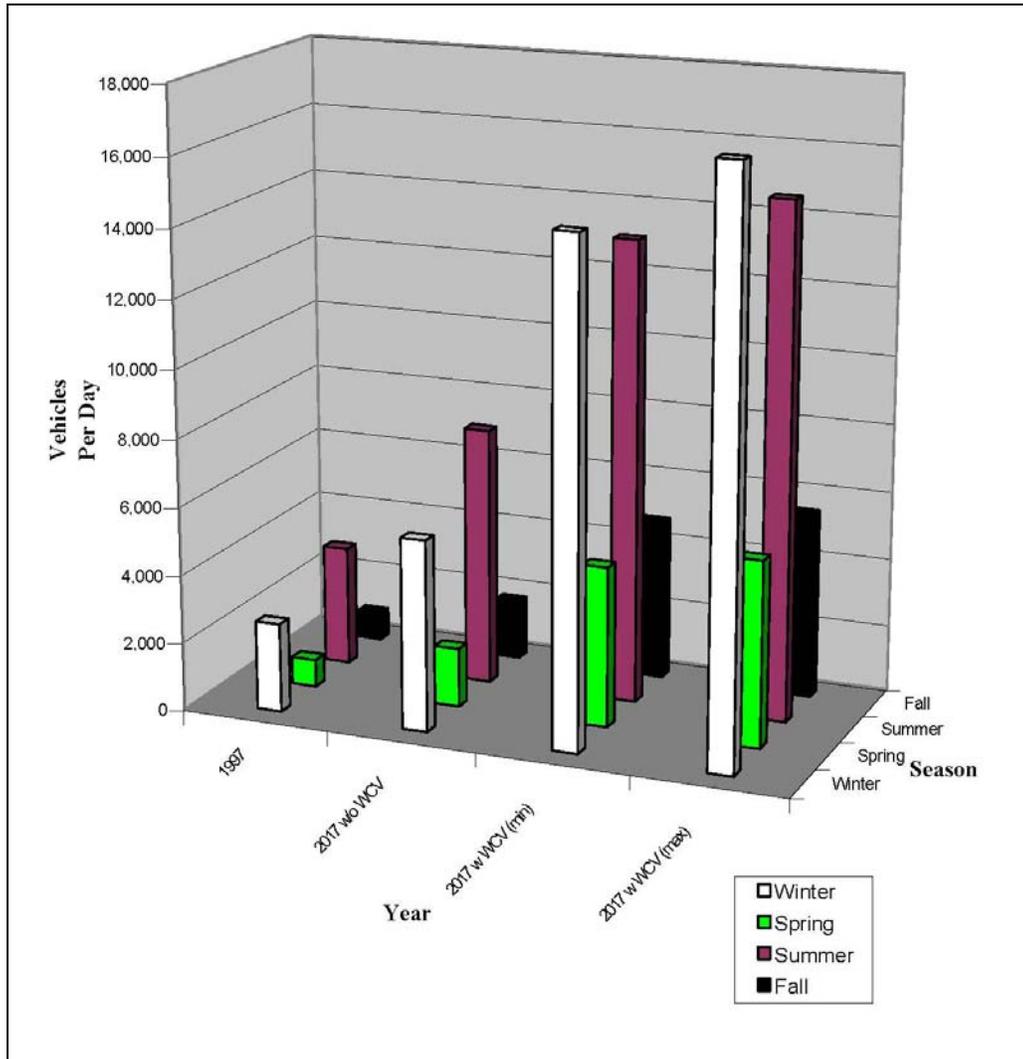


Figure 4.19-1. Highway 160 Traffic Projections.

In summary, cumulative effects of the Village at Wolf Creek and Saddle Brook developments would result in appreciable, year-round increases in high-speed vehicle traffic on Highway 160 that would increase lynx highway mortality probabilities, rising to the level of “take”, and impair lynx movements and landscape connectivity within the designated Wolf Creek Pass Landscape Linkage and between large habitat blocks in the San Juan Core area that are vital to the recovery of a viable lynx population in Colorado.

CDOT has initiated a multi-year Highway 160 improvements project within the Wolf Creek Pass Lynx Linkage. A lynx highway mortality due to a vehicle collision has occurred within the linkage and there are adverse impacts to lynx and lynx habitat anticipated from the project (USFWS 2003b). Construction activities associated with CDOT improvements to Highway 160 continue on the east and west sides of Wolf Creek Pass, with construction on the east side of Wolf Creek Pass between approximately Mileposts 170 to 178. Blasting is presently occurring in the Fun Valley section of Highway 160 creating delays in both eastbound and westbound travel. These delays are approximately 0.5-1 hour long. Current construction activity on Highway 160 over Wolf Creek Pass results in up to 4 traffic stoppages (delays). Highway 160 construction activity is expected through 2007. CDOT has incorporated four highway crossings into the project that are designed to help maintain lynx habitat connectivity across the highway (USFWS 2003b). All crossing structures would be constructed during the third phase of the project (beginning in 2008), if funding is available (USFWS 2003b, Broderdorp 2004).

CDOT Highway 160 improvements have gone through Section 7 consultation (USFWS 2003b) and are part of the environmental baseline whose effects are already included in the species' analyses.

4.19.2.6 *Land Use*

The Village development would alter current land use and may include the construction of roads, permanent residences, schools, rental units, commercial properties, and support utilities. It is assumed that approximately 138 acres of spruce-fir forest on the private parcel would be lost to development. The PDP approved by Mineral County gives no indication of open space to be retained or the location and extent of development areas on single-family, multi-family, or other land use categories. Nevertheless, some forest would likely be retained. It is also assumed that to maximize ski in-ski out options, none of the 57 acres of existing ski trails extending onto the private parcel would be directly affected by secondary development. Finally, it is assumed that the vast majority of the 93 acres of shrubby and herbaceous wetlands would be restricted from development as part of the CWA 404 permitting process. The Village property owners would be required to meet all applicable Federal, state, and local permit requirements including the performance of additional investigations if necessary to fulfill permit requirements. With the Federal actions, the cumulative impact to land use would not exceed disturbance of more than approximately 150 acres. Expansion of the Ski Area to add additional lifts would also alter current land use. Although it is unknown how much land disturbance and tree clearing would ultimately be required, such impacts would be mitigated to the extent practicable.

4.19.2.7 *Scenic Resources*

The private property has no SIO attached to it currently; however, the Village development would affect the surrounding landscape character and Scenic Resources of USFS lands. The private property was previously under the administration of the USFS until the 1986 land exchange and required the acknowledgement of, and compliance with, an amended scenic easement dated December 11, 1998. The amended scenic easement outlines the necessity of the grantors to administer the private property to protect the scenic and recreational values of adjoining NFS lands and to provide a specific level of control of the type of development on the private land to assure that any development is compatible with the Ski Area (USFS 1998).

Based on a full Village development scenario, short-term direct and indirect negative effects to scenic resources would occur based on the modification of the relatively unaltered appearance of Alberta Park. Regardless of the type of architecture applied and the methods of muting the dominant structures and facilities of the Village to more effectively repeat form, line, color, pattern, and texture of the Alberta Park area, the alterations to the lands within the subject private property would be visible from the four key viewsheds previously identified, the CDNST, Lobo Overlook, Highway 160, and Alberta Park Reservoir, as well as Handkerchief Mesa (see Figure 3.8-4). In addition, the reflectivity of the Alberta Park area would likely increase from vehicles, windows, structures and facilities catching the sun's rays. Furthermore, removal of vegetation would result in effects that would reduce the scenic quality of Alberta Park as it is viewed from key vantage points on surrounding NFS lands. Expansion of the Ski Area to add additional lifts would also alter the existing visual resources. To mitigate these impacts, land disturbance and tree clearing would be minimized, natural terrain would be followed as much as practicable, and lift towers would be painted to blend with the dark spruce/fir forest cover.

4.19.2.8 *Recreation Resources*

The construction and operation of a Village on the private property would cause cumulative impacts to both summer and winter recreational resources, users, and opportunities. Developed and dispersed recreation resources, especially those present at the Ski Area and on NFS lands adjacent to the Village property, would experience direct short- and long-term effects during the winter due to the increase in the average number of winter recreational users in the area and on the mountain. The average number of winter guests per night during high season (holidays, spring break, etc.) at full development is estimated at more than 4,000. If all units are 100 percent occupied, the total visitor population would be approximately 7,500 (Bernstein 1999). Although not all winter visitors to the Village would be there for recreational pursuits, most would seek some form of recreational opportunity and would thus pressure the developed and dispersed recreational resources in the area. Currently, approximately 4,200 skiers are considered a comfortable crowd at the Ski Area. This figure would be exceeded during the course of the ski season based on the estimated Village population, compounded by the current population of skiers who commute from either side of Wolf Creek Pass each day (up to 6,000 people) (WCSC 2004a, b; Haidorfer-Pitcher 2004). During peak use times, such as holidays and spring break, Village crowd sizes could be between 4,153 to 7,527 people (Bernstein 1999). Therefore, the maximum lift capacity (all six lifts) of 8,280 skiers could be reached in the short-term, and likely exceeded in the long-term (WCSC 2004b). In addition, when the Ski Area is operating at lift capacity, the Ski Area would be crowded and potentially dangerous due to skier traffic and the lack of sufficient safety measures and personnel. Expansion of the Ski Area to add additional lifts would mitigate these impacts and would provide additional recreational opportunities. However, the nature and scale of a Ski Area expansion would require updating the Ski Area's MDP, and the management of the Ski Area would need to coordinate the update of their MDP with the construction phasing of the potential Village development. In the event that the Village is largely developed, the expansion of the Ski Area would be a crucial component in providing sufficient developed recreation opportunities at the Ski Area for Village residents, guests, and commuting skiers.

In the event that Ski Area expansion does not occur, then the Ski Area would need to take one of two actions. The first action would be to limit ticket sales to a number deemed reasonable,

whereby crowd size, the quality of the ski experience, and skier safety could all be maintained within the existing structure of ski area services and facilities. Secondly, the Ski Area could establish a lottery system and have skiers apply for specific days they would like to ski. Tickets would then be dispersed to the lottery winners and crowd numbers could be effectively controlled. Either of these two options, designed to limit Ski Area overcrowding, would likely impact developed winter recreational users by destabilizing the confidence of Ski Area and Village guests due to the unpredictability of being able to ski during a visit.

It is possible that nordic skiers, would not be able to effectively use the existing 4.5 miles of groomed nordic trail system on lands in and around Alberta Park within the Ski Area permit boundary. In addition, the nordic trail system that currently exists could be disturbed by Village infrastructure. Lastly, the increased numbers of ticketed Ski Area users seeking to avoid the higher volumes of near-lift traffic could interfere with the nordic trail system and interrupt the dispersed winter recreational experience for the nordic recreationalist.

Currently the Ski Area does not offer recreational goods or services during the summer months. If the Village is built, the Ski Area would become a year-round resort location that would need to keep pace with the demands of the typical users. The Ski Area would likely revisit their summer operations plan and could decide to submit an application for a public special use permit to provide summer recreational opportunities and access to their new summer seasonal customer base. Expanded recreational opportunities that the Ski Area could offer include summer chairlift operation to transport customers to the Continental Divide for dispersed recreational opportunities such as hiking, wildlife viewing, and camping, and if following the lead of other year-round resort ski areas, could create and maintain a series of lift serviced mountain bike trails that descend within the existing ski area boundaries following existing ski trails. Currently, the CDNST is accessible to mountain biking from the trailhead at Wolf Creek Pass; however, trail access is not currently available by way of lift service from the Ski Area.

Lands and dispersed summer and winter recreational resources and opportunities directly surrounding the proposed Village site could experience impacts from increased use by recreational users looking for a dispersed recreational opportunity. The two areas that provide dispersed recreational opportunities which are most likely to see greatest change would be the CDNST system and Alberta Park Reservoir. The land surrounding Alberta Park Reservoir has a ROS setting of Modified Roaded. The lands surrounding the portion of the CDNST south of Highway 160 have ROS settings of either Modified Roaded or Roaded Natural, while the lands surrounding the CDNST north of Highway 160 have a ROS setting of Modified Roaded or Primitive (wilderness).

The CDNST system would experience effects on the trail section south of Highway 160, especially if the Ski Area was permitted to provide summer lift service. The number of hikers and campers using the southern portion of the CDNST that could be most readily accessed from the Village location would cause increases in person-to-person encounters in the backcountry and may disturb the dispersed, isolated opportunity sought by many traveling on the CDNST system.

On the north side of Wolf Creek Pass, the CDNST system, accessed via FSR 402, or a trailhead at Wolf Creek Pass, would experience similar impacts as the CDNST system south of Wolf

Creek Pass near the Ski Area. One consideration on this northern extent is its proximity to the Weminuche Wilderness. Because Lobo Overlook can be accessed by automobile, and due to the fact that the wilderness is less than 1 mile north on the CDNST, the primitive, dispersed character of this section of the CDNST would be impaired or lost altogether. In the long term, the recreational user seeking a dispersed wilderness opportunity in a Primitive ROS setting will be displaced by the number of people who will frequent the CDNST near the private property. However, both the SJNF and the RGNF offer numerous areas where a Primitive ROS setting can be found and isolated wilderness opportunities are afforded. In addition, the expectation of experiencing a Primitive ROS setting in an area with a ROS setting of Modified Roaded or Roaded Natural is unrealistic and could not be provided in the area immediately surrounding the Village property. In the event that recreational use could not be effectively managed, the USFS could impose a permit system in an attempt to regulate access and use. If the frequency of social encounters could not be appropriately regulated in the Weminuche Wilderness, the descriptors for social encounters and visitor impacts could be in conflict with the ROS setting and may drive a change in the ROS classification of lands within the Weminuche Wilderness along the CDNST.

Alberta Park Reservoir would see an increase in the number of recreational users during the summer months. Users seeking opportunities such as fishing, swimming, boating, and other water-based recreational opportunities would pressure the dispersed recreational resources of the reservoir. The addition of recreational users for fishing and other water-based activities would impact the dispersed summer recreational opportunities available at the reservoir. The primary impacts to dispersed recreational resources and opportunities would be from noise, boats, automobile and foot traffic, littering, and the increase of general user numbers. In the winter, no short- or long-term effects to dispersed recreational resources are anticipated at Alberta Park Reservoir; although the nordic trail system that crosses this area could experience increased use, modification, or elimination in order to accommodate Village residents and guests.

All along the Highway 160 corridor, effects from the use of 4-wheel drive vehicles and snowmobiles would occur. The closer the authorized 4-wheel drive or snowmobile road or trail system is to the Village, the more significant the effects to 4-wheel drive or snowmobile recreational users would be from Village guests seeking 4-wheel drive or winter motorized dispersed recreational opportunities. In areas that are relatively close to the Village and provide reasonable access, such as Pass Creek and Big Meadows Road, the use by motorized enthusiasts will likely be higher. The result is higher traffic volumes and greater social encounters along main stem roads with less frequent encounters on trails. The lands along Pass Creek and Big Meadows Roads have a ROS setting of Modified Roaded. Therefore, moderate to high contact on roads and moderate to low contact on trails is compatible with the ROS setting for those areas. The greater the distance from the Village location, the more dispersed and less concentrated the effects of 4-wheel drive and snowmobile use would likely be. The primary effects to 4-wheel drive or snowmobile recreational users would be the addition of traffic and congestion, which could disturb the quality of the experience and road or snow conditions and user safety on roads or trail systems that would otherwise provide a more isolated, dispersed experience.

The number of users that are estimated from the Village could drive an increased demand for guided experiences by commercial outfitters. Demands for winter and summer backcountry

tours, nordic skiing tours, as well as wilderness, fishing, biking, hiking, 4-wheel driving, snowmobiling, mountaineering, horseback riding, and camping tours would result in an increase in the need for outfitting operations. Total capacity of a management area for a given dispersed or developed recreational opportunity would need to be established and a permitting system that would limit the number of commercial guide permits might be necessary to effectively manage and limit the increase in commercial users seeking summer and winter dispersed and developed recreational opportunities in the same locations.

Finally, the Lobo Overlook area would experience an increase in the number of winter dispersed recreational users accessing the snow play area, as well as the Lobo Overlook, powerline, and snow shed backcountry ski areas. This increased dispersed recreational use and traffic would effect dispersed recreational resources and opportunities available in the Lobo area. Overcrowding could become a major issue and marginalized snow conditions and safety issues may compromise the isolated, dispersed backcountry skiing experience. In addition, it is possible that the increase in summer and winter visitor use to the Lobo area could drive a permit system that would allow the USFS to more effectively manage and limit the number of dispersed recreational users and curb problems associated with overcrowding.

The positive economic benefits from the Village are addressed in the cumulative socioeconomic section.

4.19.2.9 *Traffic and Transportation*

Cumulative impacts to traffic and transportation would result from developing the Village and expanding the Ski Area. The private property owned by the Applicant lies on the south side of Highway 160 approximately 1 mile from Wolf Creek Pass. The private property is located to the east of the Ski Area entirely within the Ski Area boundary. Highway 160 passes through Wolf Creek Pass at an elevation of 10,850 feet. There are no other public highways accessing the area near the proposed Village. Currently, FSR 391 connects Highway 160 with Alberta Lake and crosses portions of the Village, and is the only access from Highway 160 to the private property.

Once developed, the Village would affect traffic on Highway 160 and possibly traffic at the Ski Area, depending on the specific alternative selected. Alternatives 2 and 4, which both involve the extension of Tranquility Road into the Village, would have the potential to impact the Ski Area. Alternative 3 would not impact the Ski Area. The extent of any impacts, which would primarily be associated with traffic congestion, vehicle passenger safety and pedestrian safety, would ultimately depend upon the extent of Village development and the number of access roads into the Village property. Assuming full Village development and Ski Area expansion, it is clear that road improvements, intersection improvements, signalization, and mitigation measures consistent with CDOT requirements would need to be implemented as appropriate to minimize and mitigate impacts (Kimley-Horn 2004). These requirements for improvements and measures would need to be developed in the access permit process as required by CDOT. No matter which action alternative is selected, access to the Village would need to comply with the State of Colorado Access Code. The code provides procedures and standards to protect the functional level of public highways while meeting state, local and private transportation needs. Access feasibility requires the following parameters:

- Trip Generation estimates and traffic study
- Access feasibility through existing access locations
- Intersection design
- Location of and spacing of intersections
- Safety
- Geometric layout

Consequently, the Applicant would need to satisfy the CDOT requirements before an access permit is granted.

Local road access would require approval through the USFS and Mineral County planning process and adhere to USFS and Mineral County road design guidelines. Specific to these criteria include:

- Roadway width
- Roadway slope
- Adequate snow storage and drainage
- Adequate horizontal and vertical geometry
- Parking lot traffic flow impact studies

Additionally, the CDOT Transportation Improvement Program anticipates future roadway improvements along Highway 160 in the vicinity of the private property and may include reconstruction of an 11-mile stretch of Highway 160 on the west side of the Wolf Creek Pass (SLV 2004). Although the timing and details of these improvements is not certain at this time, this illustrates that the traffic and transportation impacts associated with the Village development (which is assumed to occur over a 20-year period), and the Ski Area expansion may be better dealt with in the context of the larger, programmatic traffic and transportation assessments that will occur in the future.

4.19.2.10 Cultural Resources

All construction activities for the Village would be restricted to the 287.5-acre Village boundary. This entire area has been inventoried for cultural resources (RGNF 1985), and no historic properties are located within the Village boundaries. Thus, there would be no cumulative impacts to historic properties from construction of the Village. This same conclusion would apply to the expansion of the Ski Area.

Indirect impacts in the form of visual effects could occur to unidentified cultural resources located outside the Village from the introduction of a concentration of buildings into the area.

However, architectural plans for the development call for adherence to the “National Forest” architectural style, with structures that recall the authentic Old West pioneer and silver mining history of the region (RGNF 2000). Buildings and other improvements would be constructed to blend with the natural setting and the characteristic landscape of the Wolf Creek Pass area. Exterior materials (traditional log, heavy timber, stone) and colors (dark greens, browns, greys) would be compatible with the surrounding natural landscape. With these measures in place to blend the development into the natural landscape, the visual impact to cultural resources would be reduced.

Operation of the Village would not result in any direct impacts to historic properties. Operational and maintenance activities would be conducted within the Village private property, which does not contain any historic properties.

Operation of the Village would result in an increase in the number of people accessing this area, which in turn would likely result in indirect impacts to cultural resources in the area from an increase in noise, off-road driving, and access into remote areas. Increased background noise could affect the setting of cultural resources.

Off-road driving could physically damage cultural resources, and an increase in people accessing remote areas could result in inadvertent damage or vandalism to cultural resources. Currently, winter is the primary season when people are accessing the area, when cultural resources are protected from these sources of damage by the weather and deep snow layer. However, operation of the Village would cause an increase in the number of people in the area during the spring, summer, and fall, both through vacationers and through permanent residents. These are the seasons when cultural resources would likely be impacted through off-road driving, inadvertent damage, and vandalism. It is likely that the severity of these impacts would increase; however, the potential frequency and extent of such impacts is unknown.

4.19.2.11 *Social Environment*

Section A.2.11 of Appendix A contains a detailed socioeconomic analysis of the private property development. Because the Federal action would have a minimal socioeconomic impact (as documented and described in Section 4.11), any potential cumulative impacts would occur as a result of developing the Village. This section presents a summary of those cumulative socioeconomic impacts.

Short-term and long-term direct and indirect socioeconomic impacts would be expected from implementation of the construction and operation of the Village. During construction and operation of the Village, increases in employment and labor income would be generated in the short term and long term. Employment gains include a wide variety of occupations, although many of the long-term jobs associated with the resort’s operations would be service sector related, including some seasonal employment. Because construction activities would continue throughout a 20-year build-out period, some the employment associated with the construction phase could be longer term than typical construction jobs.

Peak construction employment would occur in Year 6, with 1,435 direct jobs, and an additional 715 indirect jobs. Direct labor income is projected to total \$34.6 million in Year 6, which would

more than double the ROI's reported construction industry labor earnings of \$17.2 million in the year 2000 (BEA 2004b). During peak construction activity in year 6, more than 1,200 construction workers would need to in-migrate to the ROI in order to fill labor needs. At the peak of construction activity, it is estimated that 2,064 people would move into the ROI because of construction related jobs.

Two of the hotels in the Village would commence operations in Year 2. The remaining facilities would be gradually phased in until all lodging and retail operations were in place by the end of year 20. Operations employment generated by the Village would be primarily in the services and retail industry sectors, and would include hotel management jobs and desk clerks, housekeeping, building engineers, restaurant managers, cooks, waiters and waitresses, retail management and sales clerks. Operations employment would gradually ramp-up, as more facilities would come on line. Fully operational resort employment of 1,582 direct jobs would be achieved at the end of Year 20, when all major construction would be completed. An additional 428 indirect and induced jobs would be generated by the operation of the Village facilities at full build-out, for a total of about 2,010 new jobs.

Direct labor income is projected to total \$30.2 million in Year 20, which would increase the reported ROI retail and services industry earnings of \$81.4 million in the year 2000 by a little more than one-third (BEA 2004b). By Year 21, after construction is complete, total direct and indirect earnings impacts from operations of the Village are expected to reach \$39.3 million a year.

Construction and operation of the Village would generate additional tax revenues to the three counties comprising the economic ROI. Although the preponderance of tax revenues generated by the completed the Village resort benefit Mineral County, significant additional tax revenues would likely be generated in Archuleta and Rio Grande Counties, although the magnitude would depend on the number of residents and businesses that locate in these counties as an indirect impact construction and operation of the resort. For example, in Year 21, of the \$15.5 million dollars in taxes generated from operations alone, approximately \$7 million would accrue to state and local governments. In Year 0, only \$350,000 of the \$1.2 million taxes generated would return to state and local governments

The Village would also result in increased demand for housing and public services because of the influx of workers needed to fill construction and operations jobs. Because much of the available housing in Mineral County is seasonal/recreational housing, there would be very few housing units available in the immediate area surrounding the resort to new workers and their families. Most workers would likely commute from established communities such as Pagosa Springs in Archuleta County and Del Norte, Monte Vista, and South Fork in Rio Grande County, although other resident locations outside the ROI are possible. At minimum, in the short term there would likely be a housing shortage, with attendant increases in rental and home sale costs, unless special housing was constructed for incoming workers. Over time, this problem would be attenuated, as the housing market would likely adjust by increasing supply to meet the additional demand.

Similarly, there would likely be an increase in demand for public services including law enforcement, fire protection, medical services, and education. Although Government revenues

would be significantly increased through various tax sources, including property and sales taxes, the region's ability to absorb the expanded population would depend on how additional revenues were allocated and the capacity of local governments to plan for a continued increase in residential and tourist population over the 20-year build-out period.

At this time, the extent of economic impacts that would result from expanding the Ski Area is unknown. However, the Ski Area expansion would be smaller on an economic scale than the Village, so it is expected that the economic impacts would be less than the impacts described in Appendix A for the Village. A detailed financial and economic analysis would be conducted as appropriate if such expansion ever becomes a proposed action.

4.19.2.12 *Environmental Justice*

The construction and operation of the Village and expansion of the Ski Area could have an adverse impact on housing supply. Because of the expected high in-migration of workers, the housing market would be unable to supply sufficient housing at current rental costs. A shortage in housing often leads to increases in rental costs for both current and future residents. Although housing markets typically respond to increased demand by adding to the supply, such an adjustment can take several years to implement. In the short term, price increases would likely have a disproportionate adverse effect on low-income populations. Steep price increases would potentially render renting less affordable and make homeownership unattainable for most low-income households.

4.19.2.13 *Soils, Geology, and Minerals*

Soil resources would be affected by construction of the Village, roads, utility corridors expansion of the Ski Area and the private property. Cryohemists-Cryaquolls soils (wetlands) would require over-excavation for road and building construction. Engineered controls such as groundwater drains would be required to maintain the historic flow path of groundwater to these soils. In some areas it may be necessary to construct bridges over streams and the adjacent wetland soils. The Leighcan-Endlich soils occupy the upland areas of the Village. These soils are rocky and have a moderate erosion potential. Best Management Practices would have to be employed to mitigate erosion of these soils during construction. Revegetation would be difficult because of the rocky texture and low pH of the soil, and the altitude of the Village. Runoff of sediment from roads may impact soils adjacent to the roads and downstream receiving waters. Sediment traps and other BMPs should be employed to protect the long term health of the soils and receiving waters.

The primary geologic cumulative effect would be associated with the stability of slopes. Construction of roads may lead to over-steepened slopes requiring engineered controls to improve stability (Chen and Associates 1987). Avalanches pose a small hazard to the Village (Chen and Associates 1987, and Clark 1987).

The extraction of hard rock minerals is not allowed on the Ski Area (USFS 1996a). Leasing for oil and gas exploration and production is allowed, but the surface facilities may not be located on the Ski Area. Although there are currently no leases for oil and gas development, some could occur in the future per the RGNF Revised Forest Plan.

4.19.2.14 *Air Quality and Noise*

Air Quality

Because the Federal action would have a minimal impact on air quality (as documented and described in Section 4.15), any potential cumulative impacts would occur as a result of developing the Village and expanding the Ski Area. This section presents a summary of those cumulative air quality impacts. This section also discusses cumulative impacts to air quality as a result of known point sources on the west side of the Continental Divide.

The construction effort for the Village and Ski Area would have local, short- and long-term impacts to air quality over a 20-year period. Air quality effects associated with the construction of new facilities include temporary engine and dust emissions from a variety of sources. Dust emissions (including PM₁₀ and PM_{2.5}) generated by various construction activities would vary from day to day, depending on the level and type of activity, silt content of the soil, and weather conditions. Depending on the weather, soil conditions, the amount of activity taking place, and nature of dust control efforts, these impacts could affect existing recreational areas or future residential areas within or near the project.

Emissions generated from construction activities would also include tailpipe emissions from heavy-duty equipment, worker commute trips, and truck trips (to haul away debris materials to appropriate reuse or refuse sites and to supply construction sites with new construction materials). Both mobile and stationary equipment would generate emissions of ozone precursors, carbon monoxide, and particulate matter (PM₁₀ and PM_{2.5}), as well as toxic air contaminants from use of diesel-powered equipment. Toxic air contaminants are less pervasive in the atmosphere than criteria air pollutants and do not have corresponding ambient air quality standards, but they are nonetheless linked to short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects.

Approval and implementation of the project would generate greater amounts of onsite and offsite traffic volumes, increasing local levels of carbon monoxide and other pollutants. The Village would also result in air pollutant emissions affecting the entire air basin. These regional pollutants would include volatile organic compounds, nitrogen oxides and PM₁₀.

Vehicle trips associated with the operation of the Village and the expansion of the Ski Area would result in emissions of various air pollutants (primarily carbon monoxide, nitrogen oxides, respirable particulate matter, diesel particulate, and hydrocarbons). Trips to and from the Village and Ski Area would include travel by overnight visitors between the Village and outlying areas, supply trips by delivery trucks, and commute trips by some staff that would work at the Village and Ski Area. The number of trips and associated impacts would be partly mitigated by the availability of alternative transportation modes, such as shuttle buses. The number of vehicle trips would increase over time as Village development and Ski Area expansion progresses. However, vehicle emissions would be mitigated in the long term as newer and cleaner vehicles replace older ones.

If the Applicant were to site, construct, and operate a LNG power generating facility as part of the private land development, such action would require CAA compliance with the Colorado

Department of Public Health and Environment, and the EPA siting, construction, and operation permit requirements. There is not enough detail to accurately evaluate potential cumulative impacts from the Village development in a quantitative manner.

Impacts to air quality in the region are derived from numerous known point sources on the west side of the Continental Divide. Two coal-fired power plants are located in the Four Corners region approximately 130 miles southwest of the proposed project area: Public Service Company of New Mexico (PNM) San Juan Generating Station in Waterflow, New Mexico (7th largest coal-fired power plant in the Western U.S.) and the Arizona Public Service Company (APS) Four Corners Power Plant in Fruitland, New Mexico. San Juan Generating Station emitted 21,320 tons of sulfur dioxide (SO₂) in 2001. SO₂ is a primary air pollutant resulting in suspended particulate matter and the creation of secondary pollutants such as nitrogen dioxide and nitric acid vapor. Four Corners Power Plant emits approximately 25,000 tons of SO₂ per year.

Navajo Generating Station is located directly southeast of Page, Arizona, approximately 260 miles southwest of the proposed project area. Navajo Generating Station is the nation's largest emitter of SO₂, emitting close to 82,000 tons per year. In addition, Navajo Generating Station emits approximately 34,000 tons per year of nitrogen oxides (NO_x). NO_x is a major contributor to acid deposition and leads to increased levels of ozone and other photochemical oxidants that adversely impact air quality.

Oil and natural gas development projects occur in the San Juan Basin in northwestern New Mexico and southwestern Colorado, approximately 70 to 100 miles southwest of the proposed project area. In the Farmington, New Mexico area, there are over 18,000 existing natural gas wells administered by the Bureau of Land Management. The 2003 Farmington Resource Management Plan (RMP)/EIS identified reasonably foreseeable development of approximately 10,000 new natural gas wells (many with compressors), 805 miles of new road, and 44,300 acres of new disturbance over the next 15-20 years primarily in Rio Arriba and San Juan counties (BLM 2003). This development would generate approximately 72,000 tons of NO_x per year. Natural gas development is also occurring in the Jicarilla District, Carson National Forest, approximately 55 miles southwest of the proposed project area. Coal Bed methane production and other natural gas formation exploration and development are occurring on Southern Ute Tribal land in the Ignacio, Colorado area. The Northern Basin Coalbed Methane Development DEIS analyzes the potential development of approximately 300 natural gas wells on USFS, BLM, state and private property in the Northern San Juan Gas Field, including potential drilling in the HD Mountains, near Bayfield, Colorado (approximately 40 miles southwest of the proposed project area).

Noise

Construction associated with road access and utility corridors would be completed prior to any significant Village and Ski Area construction. As such, no cumulative impacts would be expected. The noise impacts associated with the Village construction are described in Section A.2.15 of Appendix A. The Ski Area expansion would have minimal noise impacts.

Following construction, the Village development and Ski Area expansion would add new residences and increased non-residential uses. Vehicular traffic would increase, adding new traffic noise. Other anticipated new noise sources would include mechanical noise generated by air conditioning units and natural gas-fired electric generators, noise generated by water and wastewater treatment plant operations, and noise generated by use of recreational areas and similar noise. Noise impacts would be noticeable to recreational users and future residents of the Village.

4.20 KEY ISSUES

4.20.1 Adequate Access Across NFS Land For the Applicant to Secure the Reasonable Use and Enjoyment of the Village Property

4.20.1.1 *Alternative 1 – No Action Alternative*

FSR 391 is currently used for public access to NFS lands, in conjunction with Ski Area operations (including parking) associated with the Highway 160 intersection at the Ski Area entrance. The Applicant use of FSR 391 is limited to the time of the year (mid-June through September) when the road is otherwise open for use by the general public (USFS 1990). Road use is limited to dry weather by vehicles not exceeding 8 feet in width and/or 80,000 pounds gross vehicle weight. FSR 391 is closed for the remainder of the year, and is used by the Ski Area as part of its skiable terrain. The Applicant has stated that under the No Action Alternative, full development of the private property would occur. While the Applicant could fully develop the private property using existing FSR 391, the No Action Alternative would not allow “reasonable use and enjoyment” of private property, due to the limitations of the approximate 3 months that FSR 391 is open per year. The Applicant would only be able to use FSR 391 from approximately mid-June through September when the road is otherwise open for use by the general public. FSR 391 is closed to vehicle traffic for the remainder of the year, and is used by the Ski Area as skiable terrain. Access to the Applicant’s private property during the ski season would be restricted by the conditions of use for FSR 391.

4.20.1.2 *Alternative 2 – Proposed Action*

The Proposed Action would allow the Applicant “reasonable use and enjoyment” of the private property by providing access. This access route would have the least cost to the Applicant. It would not require the applicant to modify the Mineral County PUD plat.

4.20.1.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

The Snow Shed - East Village Access Alternative would allow the Applicant “reasonable use and enjoyment” of the private property by providing access. This Alternative would be at an increased cost to the Applicant compared to Alternative 1 or 2. It could potentially require the Applicant to make modifications to the Mineral County PUD plat.

4.20.1.4 *Alternative 4 – Dual Access Road Alternative*

The Dual Access Road Alternative would allow the Applicant “reasonable use and enjoyment” of the private property by providing access. This Alternative would have the greatest cost to the Applicant, but would provide the Applicant the greatest amount of flexibility to access the private property for the purposes of operating the Village over the long term. It could potentially require the Applicant to make minor modifications to the Mineral County PUD plant.

4.20.2 Compatibility with the Wolf Creek Ski Area

4.20.2.1 *Alternative 1 – No Action Alternative*

FSR 391 is currently used for public access to NFS lands, in conjunction with Ski Area operations (including parking) associated with the Highway 160 intersection at the Ski Area entrance. The Applicant would only be able to use FSR 391 from approximately mid-June through September when the road is otherwise open for use by the general public (USFS 1990). FSR 391 is closed for the remainder of the year, and is used by the Ski Area as part of its skiable terrain. Access to the Applicant's private property during the ski season would be limited by the conditions of use for FSR 391. The No Action Alternative is currently compatible with the Ski Area, and would remain compatible in the future.

4.20.2.2 *Alternative 2 – Proposed Action*

The Proposed Action would provide the Applicant year-round access to the private property via an extension of Tranquility Road. The road access associated with this alternative would merge into the current entrance to the Ski Area at the junction with Highway 160. With respect to compatibility with the Ski Area, implementation of the Proposed Action would be the least compatible alternative for the following reasons:

- Traffic control issues associated with operating the Ski Area and the Village using only Tranquility Road as access to Highway 160. Because there would be no separation between Ski Area traffic and private property traffic, the potential to cause conflicting flows and congestion is high, particularly in the mornings (when skiers arrive) and afternoons (when skiers depart). Higher traffic volumes in close proximity to the Ski Area would increase the potential for accidents involving skiers and vehicles.
- Current Ski Area access at the intersection with Highway 160 has been designed with CDOT, with a deceleration lane from the west which is located on steep curve with limited visibility. Winter conditions of snow and ice, and existing traffic levels entering the Ski Area during peak times (estimated at 2,500 cars) make this intersection less than ideal for potential increased traffic associated with access to the private property. With potential additional traffic of the private property access there would be a likely trigger of required CDOT upgrades to Highway 160 at the Ski Area entrance including, but not limited to, traffic signals, removal of trees and reduction of embankments, and a realignment of the existing deceleration lane.
- The Ski Area would lose approximately 2.3 acres (250 feet by 400 feet) of skiable terrain below Tranquility Road if this Alternative is selected.
- The Ski Area's Operating Plan has traditionally allowed gated closure of roads into the Ski Area boundary during hours when skiing is not occurring, primarily for security reasons. The private property would require 24-hour access. This conflicts with the WCSC security concerns of restricting access during non-operational times for the Ski Area.

- The ability to close Ski Area roads is important for snow removal during winter months. The private property may require 24-hour access. The Ski Area does not conduct 24-hour snow removal. Tranquility Road is typically last in the Ski Area's current snow removal progression. Snow removal presents a major potential conflict for the Ski Area/Applicant's mixed use of Tranquility Road.
- Tranquility Road was built by the Ski Area with a maximum 7.8 percent grade and a 23-foot driving surface constrained by retaining walls in portions of the road. As currently designed, Tranquility Road is intended to accommodate traffic patterns for Ski Area operations with ingress in the morning and egress in the late afternoon.
- To prove compatible for mixed use Ski Area/Village traffic, Tranquility Road would require extensive coordination between the Ski Area and the Applicant, as well as, USFS management and administration concerning traffic control measures.
- Additional USFS authorization, including operational conditions to prevent the material interference with the rights and privileges granted to the Ski Area via the WCSC SUP, would be needed to enable the Applicant to use Tranquility Road. Multiple overlapping SUPs would be complex and require extensive USFS administrative effort.

4.20.2.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

The Snow Shed - East Village Access Alternative would allow the Applicant to access the private property at an entrance entirely separate from the Ski Area. Alternative 3 is the most compatible with the Ski Area. This alternative would allow access to the private property away from Ski Area operations. Mixed Ski Area/private property access of Tranquility Road would not occur. As a result, there would be no snow removal conflicts, no security conflicts, and no user conflicts. There would be no loss of skiable terrain (approximately 23 acres) for the Ski Area associated with the Tranquility Road 250-foot extension.

4.20.2.4 *Alternative 4 – Dual Access Road Alternative*

The Dual Access Road Alternative would allow the Applicant to access the private property at an entrance entirely separate from the Ski Area while retaining the option to use Tranquility Road. The two access roads could be designed for traffic flow with one road serving as an entrance to the private property and the other as an exit. Two access roads would be available for the private property users in the event of emergency evacuations. Two access roads would allow for more control of traffic (less congestion) and have the potential to reduce vehicle traffic on Tranquility Road. This Alternative would allow the USFS to have management options if use of the two roads needs to be altered if user conflicts are identified (e.g., Tranquility Road could still potentially have traffic and safety issues that reduce compatibility). The Ski Area would lose approximately 2.3 acres of skiable terrain below Tranquility Road if this Alternative is selected. The Ski Area's Operating Plan has traditionally allowed gated closure of the roads into the Ski Area boundary during hours when skiing is not occurring, primarily for security reasons. The private property would require 24-hour access. This conflicts with the WCSC security concerns of restricting access on Tranquility Road during non-operational times for the Ski Area. Tranquility Road also requires snow removal operations during the winter months with potential

conflicts concerning the Ski Area and private property access. To prove compatibility for mixed use Ski Area/Village traffic, Tranquility Road would require extensive coordination between the Ski Area and the Applicant, as well as USFS management and administration concerning traffic control measures. Additional USFS authorization, including operational conditions to prevent the material interference with the rights and privileges granted to the Ski Area via the WCSC SUP, would be needed to enable the Applicant to use Tranquility Road and oversee the use of skiable terrain. Multiple overlapping SUPs would be complex and require extensive USFS administrative effort.

The Dual Access Road Alternative would require Ski Area involvement in managing traffic on Tranquility Road with the Applicant. This Alternative would be moderately compatible with the Ski Area.

4.20.3 Public Safety

4.20.3.1 *Alternative 1 – No Action Alternative*

The No Action Alternative would result in retention of current USFS management criteria for the Ski Area entrance, encompassing FSR 391 and the existing Tranquility Road route to parking lots. Vehicular traffic to the private property would be limited to approximately mid-June through September. The No Action Alternative would provide only one route into the private property. This would result in one ingress/egress point for the private property which could be detrimental to public safety in the event of the need for emergency evacuations.

4.20.3.2 *Alternative 2 – Proposed Action*

The combination of skier access, public access and private property traffic concentrated on Tranquility Road raises public safety concerns. As noted in the discussion for “Compatibility with the Ski Area”, there are several important issues associated with traffic that potentially translate into public safety issues. Emergency evacuation for the private property and skiers utilizing the Tranquility lots would be limited to Tranquility Road. The potential for skier/traffic conflicts would increase on areas of skiable terrain in proximity to Tranquility Road. This alternative has the potential to increase traffic congestion at the existing Highway 160 intersection with associated public safety impacts. This alternative would have the highest public safety implications.

- Tranquility Road was built by the Ski Area with a maximum 7.8 percent grade and a 23-foot driving surface constrained by retaining walls in portions of the road. As currently designed, Tranquility Road is intended primarily for one-way travel commensurate with Ski Area operations. Public safety would be potentially compromised by the attempt to have two-way vehicle traffic on Tranquility Road.
- There are traffic control issues associated with operating the Ski Area and the Village using only Tranquility Road as access to Highway 160. Because there would be no separation between Ski Area traffic and Village traffic, the potential to cause conflicting flows and congestion is high, particularly in the mornings (when skiers arrive) and afternoons (when skiers depart). Higher traffic volumes in close proximity to the Ski Area would increase the

potential for accidents involving skiers and vehicles. This would require major traffic control management by the Ski Area and Applicant on a daily basis during winter months.

- Current Ski Area access at the intersection with Highway 160 has been designed with CDOT, with a deceleration lane from the west which is located on steep curve with limited visibility. Winter conditions of snow and ice, and existing traffic levels entering the Ski Area during peak times (estimated at 2,500 cars) make this intersection less than ideal for potential increased traffic associated with access to the private property. With potential additional traffic of the private property access there would be a likely trigger of required CDOT upgrades to Highway 160 at the Ski Area entrance including, but not limited to, traffic signals, removal of trees and reduction of embankments, and a realignment of the existing deceleration lane. These potential Highway 160 upgrades would be developed by the Applicant.
- The single access road to the private property would not provide emergency evacuation options and would allow only one source for traffic ingress/egress. This Alternative represents a high probability of increased public safety issues in the event for the need of mass evacuation using one access road for ingress/egress.
- The Ski Area's Operating Plan has traditionally allowed gated closure of roads into the Ski Area boundary during hours when skiing is not occurring, primarily for security reasons. The private property would require 24-hour access. This conflicts with the WCSC security concerns of restricting access during non-operational times for the Ski Area. For public safety reasons, the Ski Area desires the ability to restrict access by the public during snow removal and grooming operations, during hours when the Ski Area is not in operation.
- The ability to close Ski Area roads is important for snow removal during the winter months. The private property may require 24-hour access. The Ski Area does not conduct 24-hour snow removal. Tranquility Road is typically last in the Ski Area's current snow removal progression.

4.20.3.3 *Alternative 3 – Snow Shed - East Village Access Alternative*

The Snow Shed - East Village Access Alternative would provide the private property a separate entrance, independent of the Ski Area. This would allow the access route to be designed solely for private property traffic, and could be managed according to private property traffic flows. The Snow Shed – East Village intersection with Highway 160 has an appropriate level of sight, no curves, and acceleration/deceleration lane creation is feasible. These potential Highway 160 upgrades would be developed by the USFS, Applicant, and CDOT. This Alternative has the potential to reduce traffic levels at the Ski Area/Highway 160 intersection. Mixed Ski Area/private property access of Tranquility Road would not occur. As a result, there would be no snow removal conflicts, no security conflicts, and no user conflicts. This alternative would have minor public safety implications.

4.20.3.4 *Alternative 4 – Dual Access Road Alternative*

The Dual Access Road Alternative would allow the Applicant to access the private property at an entrance entirely separate from the Ski Area while retaining the option to use Tranquility Road. The private property and Ski Area could be managed separately with traffic levels and traffic types divided by the two intersections with Highway 160. Two access roads would be available in the event of emergency evacuations and would allow traffic to be managed safely. The Ski Area would lose approximately 2.3 acres of skiable terrain below Tranquility Road if this Alternative is selected. The Ski Area's Operating Plan has traditionally allowed gated closure of the roads into the Ski Area boundary during hours when skiing is not occurring, primarily for security reasons. The private property would require 24-hour access. This conflicts with the WCSC security concerns of restricting access on Tranquility Road during non-operational times for the Ski Area. Tranquility Road also requires snow removal operations during the winter months with potential conflicts concerning the Ski Area and private property access. This Alternative would reduce traffic levels at each intersection with Highway 160 and would allow flexibility in coordinating snow removal and security for the Ski Area and the private property. This Alternative would allow the USFS to have more management options if uses of the two roads need to be altered if public safety conflicts are identified. The Dual Access Road Alternative would require Ski Area involvement in managing traffic on Tranquility Road with the Applicant. This Alternative would provide the Applicant with the most flexibility for private property access. Of the action alternatives, this alternative would be moderate with respect to public safety implications.

4.20.4 *Public Access to NFS Land*

4.20.4.1 *Alternative 1 – No Action Alternative*

The No Action Alternative would result in FSR 391 remaining under current USFS management criteria. The public currently uses FSR 391 to gain access to the Alberta Lake area. Unimpeded public access to the Alberta Lake area would be retained under the No Action Alternative. There would be no impacts to public access as a result of the No Action Alternative.

4.20.4.2 *Alternative 2 – Proposed Action*

The private property development as the Village is proposed a gated community. The Proposed Action would result in Tranquility Road being built with a guard station at the entrance to the private property. The FSR 391 route would remain in place traversing the private property to the Alberta Lake area. The public would retain unimpeded access to NFS lands on the eastern side of the private property under the current USFS management restrictions. Consequently, there would be no impacts to public access as a result of this alternative.

4.20.4.3 *Alternative 3 – Snow Shed - East Village Alternative*

The Snow Shed - East Village Alternative would result in FSR 391 remaining under current USFS management criteria. The public currently uses FSR 391 to gain access to the Alberta Lake area. Unimpeded public access to the Alberta Lake area would be retained under the Snow Shed - East Village Alternative. There would be no impacts to public access as a result of the Snow Shed - East Village Alternative.

4.20.4.4 *Alternative 4 – Dual Access Road Alternative*

The Dual Access Road Alternative would allow for two entrance/exit points to the private property. The two road scenario would allow the USFS to evaluate traffic rates, pattern, and flow associated with the private property and make management decisions for access accordingly. The Dual Access Road Alternative would result in FSR 391 remaining under current USFS management criteria with required unimpeded public access. Thus, there would be no impacts to public access as a result of this alternative.