APPENDIX A

Development of the Village at Wolf Creek

APPENDIX A: DEVELOPMENT OF THE VILLAGE AT WOLF CREEK

This appendix includes an analysis of the potential effects of the development of the private property at Wolf Creek. The development of the Village is not guaranteed. The analysis in this Environmental Impact Statement (EIS) is based on preliminary information which is subject to change and refinement. There has not been a final approval of the Village Planned Unit Development (PUD) to date. Detailed design plans have not been created and the multitude of permits required by Mineral County have not been issued. This analysis assumes that if and when the development occurs, it will comply with all applicable Federal, state, and local laws and regulations. For purposes of this analysis, it is assumed that the landowners would construct, over a 20-year period, the Village at Wolf Creek as described in the Leavell-McCombs Joint Venture Application to Mineral County for a PUD on November 29, 1999.

A.1 DESCRIPTION OF THE VILLAGE AT WOLF CREEK

The Village would consist of development of four distinct parcels within the 287.5-acre area to be built in phases per the Mineral County PUD. These parcels are referred to as Parcels A, B, C, and D; and are further broken down into Blocks which include single family housing, multi-family housing, condominiums and commercial areas, as well as infrastructure and utility areas. The potential impacts of the Village (construction and operation) include:

- Buildings for residential and commercial development (2,172 units). Blasting and cut/fill of areas within the 287.5-acre private property on steep slopes (particularly in the southern portion of the 287.5-acre private property near the area known as "the Waterfall" in the Ski Area – Blocks 13, 14, and 15 in Parcel C). These areas would need to be leveled for building sites.

- Shuttle System to justify parking variances or to eliminate congestion. Railroad system for inter-Village transportation

- Parking facilities for approximately 4,542 vehicles: 4,206 covered spaces and 336 open spaces

- Bridges across delineated wetlands and drainages within the 287.5-acre private property. Includes 10 roadway bridges and additional pedestrian bridges

- Power Plant for heating and electricity generation requiring liquefied natural gas (LNG) trucked to the 287.5-acre property. The Phase 1 build-out of the Village would require one 2-megawatt (MW) generator. The preferred unit is a Caterpillar 3561B, non-road, carburetor emissions certified 2,000 natural gas fired generator. This unit has Silex Sound attenuated enclosure 75 decibels A level (dba) at 5 feet; 4,200 gallons diesel double wall UL listed 142 tank; house power panel; space heaters; ventilating fan; Pneumerctor TMS fuel tank monitoring system; EMCPII+ control panel, 300 amp, 4,160 volt main breaker. The unit is totally self-contained. The dimensions of the unit are 586 inches long by 144 inches wide by 162 inches tall, and it weighs approximately 110,000 pounds (lbs) without fuel. The unit is top exhausted with super critical grade hockey puck style silencer installed internal insulation. Fuel would be delivered by truck to the Village once every 2 weeks from a

supplier in Cortez, Colorado, for Phase 1. The Phase 1 build-out is estimated to require 750 kilowatts (kW) of generation capacity. This leaves 1,250 kW capacity to spare which can be sold, or the generator can operate at 40 percent capacity with less emissions and fuel consumption. The other 1,250 kW of capacity would then be used to provide power to a portion of Phase 2. This unit would also provide power for construction of the Village.

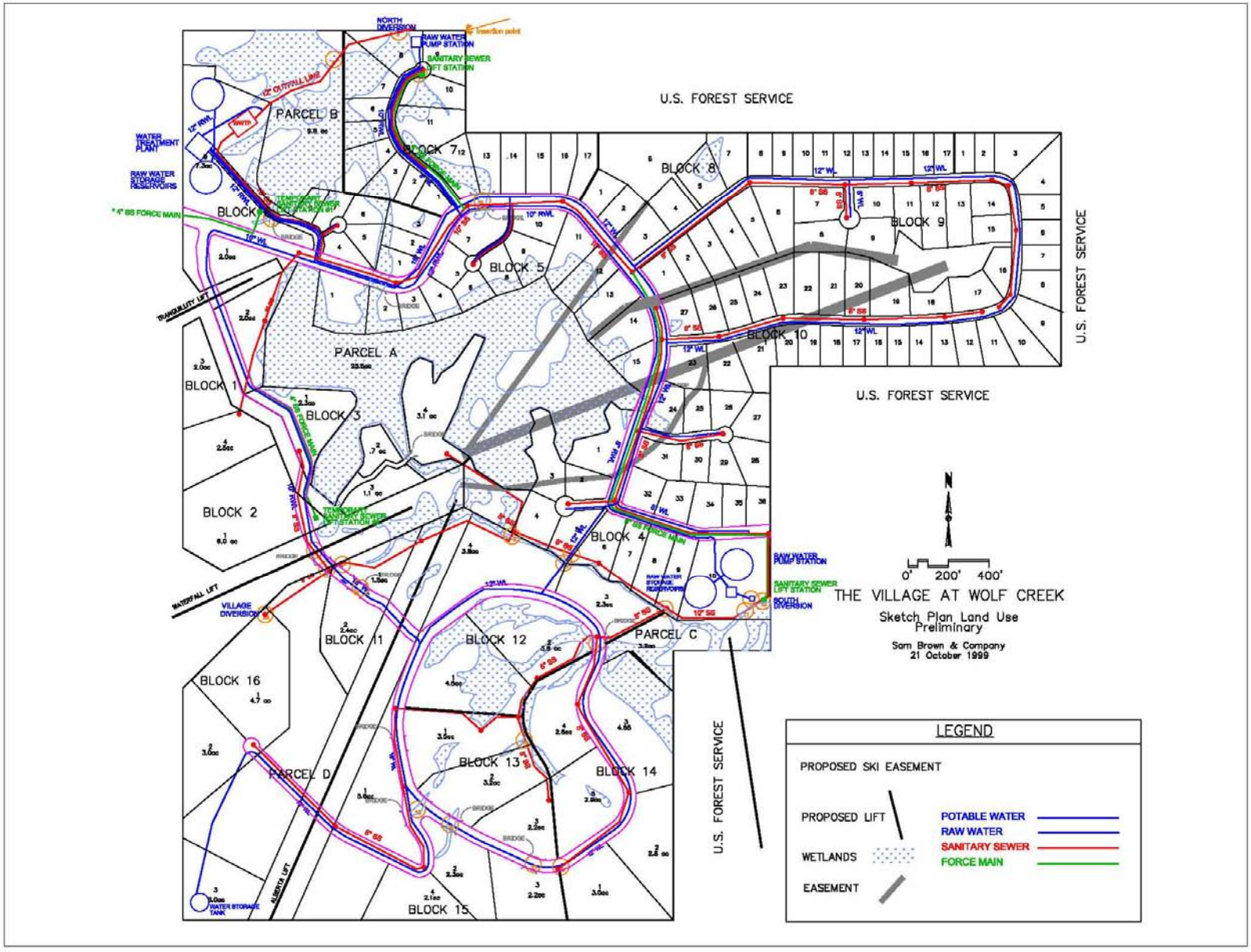

Figure A.1-1. Sketch Plan for the Village at Wolf Creek.

At full build-out (estimated at 20 years), it is anticipated that ten 2-MW units (total of 20 MW) would be required to fully power the Village, if an outside power source is not available or desirable (Trembath 2004).

- Emergency Power Generation

- 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 property with associated piping and pumping infrastructure; raw water storage reservoirs and water tanks for storage. Based on observed wastewater flows and use in the Wolf Creek geographical region, 2,172 connections would result in an estimated wastewater flow at full build-out of 532,140 gallons per day (gpd) (Malish 2004). The requested permit is for a discharge capacity of 600,000 gpd, with Phase 1 capacity of 50,000 gpd, and Phase 2 capacity of 100,000 gpd.

- Sanitary sewer collection and handling lift stations in four locations, two temporary lift stations and two permanent stations (North Diversion and South Diversion areas)

- Secondary roads within the private property would be constructed to Mineral County PUD standards which include a 24-foot minimum width. Approximately 3 miles of secondary roads would be constructed within the 287.5-acre private property.

- Solid waste management would be privately contracted during the initial phase of construction and would move to a solid waste transfer facility with compaction capabilities as the parcel becomes fully built out. Solid waste transfer facility sludge from the wastewater treatment plant would have to remain separated from the solid waste stream. Sludge would be handled by a private contractor.

- Water systems for potable water and fire protection would be constructed to serve the parcel. Four 3 million gallon (11 million L) tanks and one half million gallon (1.9 million L) tanks would be constructed to provide water for the development. The tanks would be built as the phases of the development are constructed.

- Stormwater collection and discharge system

- Electrical and communications distribution system

- Outdoor lighting

- Guard Station at entrance to Village at Wolf Creek

- School site within the 287.5-acre property parcel. The Applicant has proposed a 3-acre lot area within the eastern portion of the parcel to be conveyed to the Mineral County School District at the time of final platting, for the sole purpose of a school and educational facilities. This would be triggered by the Village population generating a minimum of 40 students registered in the Creede Consolidated School District. Financial terms of constructing and

operating the school would be negotiated between the Applicant and the Creede Consolidated School District (Honts 2000).

- Ski Lifts. As part of the 1998 Master Development Plan (MDP), there are eight ski lifts that have been identified for construction in conjunction with development of the Village.

- Employee Housing

- Snow Removal

A.2 POTENTIAL ENVIRONMENTAL IMPACTS OF THE DEVELOPMENT OF THE VILLAGE AT WOLF CREEK

A.2.1 Surface Water

A.2.1.1 *Onsite Development*

This section describes the potential reasonable and foreseeable effects of the proposed Village development of the 287.5 acres of private land that would result from the United States Forest Service (USFS) authorization of access. The following section is qualitative in nature. Until a formal detailed plan is submitted to Mineral County, the USFS cannot fully assess the implications to the National Forest Service (NFS) resources.

Applicable Federal and state regulations governing surface water on the Village property include the following:

- Section 404 of the Clean Water Act as regulated through the United States Corps of Engineers (USACE)

- National Pollution Discharge Elimination System (NPDES) permits issued by the State of Colorado

- Regulation 31 Anti-degradation of water quality regulated by the State of Colorado

- National Flood Insurance Program as regulated by Mineral County

Section 404 Permit

There are approximately 93 acres of shrubby and herbaceous wetlands within the 287.5 acres owned by the Applicant. There are two elements of development that would be considered in Section 404 permitting. The first is disturbance to wetlands; the second is placement of fill in waters of the U.S. The Village currently proposes an approach of avoidance to both elements by designing infrastructure (roads, bridges, and utilities) around most of the 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 them 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).

Quantification for disturbed wetlands, based on current plans for the Village, has not been performed, presumably because the current plans for roads and infrastructure are avoiding or minimizing effects to the existing wetlands. However, it should be noted that many of the lots or parcels shown on the plat extend into the delineated wetland areas. Mineral County Resolution No. 00-13 for the Village prohibits disturbance of these wetland areas, which shall be enforced through the Master Covenants for the Village and regulated by the USACE.

NPDES Permit

Any land disturbing activity that totals over 1 acre, in phases or as a whole, must obtain a NPDES permit. Permit requirements would include a Storm Water Pollution Prevention Plan for construction related activities with appropriate Best Management Practices (BMPs). 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. A general plan is presented in the Master Drainage Plan (Murfee 2002), including Sequencing of Construction, a Pollution Prevention Control Plan aimed at retaining sediment on site, inspection and maintenance procedures, and on-site materials and spill control. This document would be submitted to the State of Colorado for issuance of the NPDES Permit.

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 property with associated piping and pumping infrastructure; 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.

Regulation 31 Antidegradation of Water Quality

Water quality in both unnamed tributaries to Pass Creek would be potentially impacted by the Village development. Wastewater discharge in combination with surface water pollutants would introduce contaminants of concern without proper treatment and mitigation. 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.

National Flood Insurance Program

Mineral County currently participates in the Nation Flood Insurance Program and as such would require the Village property to comply with applicable criteria, including limiting development to areas outside of the 100-year floodway. Changes to base flood elevations are also limited to a maximum of 1 foot. In cases where local criteria are more stringent, those criteria shall apply.

A.2.1.2 *Offsite Effects*

Development of the Village would have affects to resources on NFS property surrounding the private property. Some of these details are not yet developed and would not be developed until a formal detailed plan is submitted to Mineral County and the Forest Service. Thus, the presentation is qualitative. In cases where Federal, state, or local laws require mitigation, it is so noted.

Hydrologic Function

A *Master Drainage Plan* was prepared for full build-out of the proposed Village property (Murfee 2002). For the purpose of this study the site is divided into eight sub-basins within two catchment areas located within the proposed subdivision. 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 developement of drainage-related designs as the site development proceeds. In the *Master Drainage Plan*, hydrologic modeling was based on rainfall and SCS TR-55 'graphical peak discharge method' (USDA 1986) with peak flows for the 2-year, 10-year, 25-year, and 100-year determined at the selected points. Flows considered the affects of the proposed land use changes including impervious cover. Approximately 50 percent of the Village property would become impervious under the fully-developed conditions resulting in increased flows within the property as well as downstream. The results of the hydrographic analysis indicate full build-out 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.

Riparian Areas

Stream Health

A stream health assessment for the two unnamed tributaries to Pass Creek is currently being performed and is anticipated to be incorporated into the Final EIS. For the purpose of this Draft EIS, stream health assessment of existing conditions relies on the past efforts performed by the USFS for the Handkerchief Mesa Environmental Assessment (EA) (USFS 2000). This analysis indicates that the Pass Creek streams are healthy and have responded positively to the application of USFS standards and guidelines.

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. Such additional measures could include storm water 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 would be adversely affected by the Village development. 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. Water quality would also be effected and is discussed below.

Based on current applicable Federal, state and local criteria the only direct element of concern that would be regulated is water quality. Sediments would be indicative of erosion and contaminants from the Village. Other parameters, such as channel morphology, incision, and changes to planform are not directly regulated by current applicable regulations. Thus, in the absence of applicable criteria and without a mitigation plan in place, development by the Village is anticipated to degrade stream health.

Floodplains

Mineral County currently participates in the National Flood Insurance Program and as such would require the Village property to comply with applicable criteria, including limiting development to areas outside of the 100-year floodway. Changes to base flood elevations on and offsite are also limited to a maximum of 1 foot. In cases where local criteria are more stringent, those criteria shall apply.

Wetlands

Possible foreseeable wetland effects that could occur from the Village are noted below. Note that detailed design has not been prepared and much of this discussion is qualitative, based on information generated to date for the Village.

1) Surface and subsurface flows currently feed the wetlands and fens within the Village property. Disturbance of the flow patterns would affect the health of these wetlands. Should the Village property not apply for an Individual Section 404 Permit due to implementation of Nationwide Permits, that Nationwide Permit would be the regulating authority overseeing indirect impacts.

2) 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) were 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 Section 404 permit process.

3) Offsite wetlands downstream of the Village property could be adversely affected as an indirect result of stream degradation, as discussed in the stream health section above.

At previously noted, the Village has agreed to provide the USACE with construction drawings as they progress, for review and comment to insure regulatory compliance (Honts 2004).

Surface Water Quality

Streams downstream of the Village property on USFS land fall under the anti-degradation review process set by the Colorado Department of Public Health and Environment. The criteria and standards that are being employed for the protection of water quality center on protection of surface water tributary to the two unnamed tributaries of Pass Creek. It is also possible that sensitive environmental areas, such as wetlands or fens within the Village property, would require protection and mitigation from contaminated surface water quality.

Development of the Village has the potential to generate contaminants typical from vehicle use, landscaping, snow removal, and road maintenance. The Village currently has a snow removal plan but it does not include a proposal for snow melt treatment. Nor do the current Village plans include stormwater runoff treatment for removal of sediments or other contaminates of concern for post-construction (permanent developed conditions). To minimize downstream effects on water quality and to minimize effects on wetlands and fens in the Village property, it is recommended that baseline conditions be established and a water quality plan be implemented. It is anticipated that this can be addressed through Mineral County plan reviews and the appropriate permitting including Section 404, State of Colorado's 401 and the Stormwater Pollution Prevention Plan/NPDES.

A.2.2 Groundwater

Regardless of the road access alternative chosen for the Village, development would have an effect on groundwater resources. These effects would be relatively localized 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. No site specific studies of the net change in recharge have been performed, so the net change in groundwater recharge 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 water lost to evaporation and 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.

Numerous wetlands are present in the area of the Village. The historic flow path of groundwater must be maintained to near its historic condition to mitigate effects on the wetlands. As previously stated, the Village has agreed to provide the USACE with construction drawings as they progress, for review and comment to insure regulatory compliance (Honts 2004). Information from these studies would be used to judge if the effects of the construction can be managed to result in an acceptable level of effect on the wetlands.

A.2.3 Water Rights and Use

The potential development of the Village would increase the number of skiers using the Ski Area. An adequate water supply would be required for this proposed development and for increased Ski Area water usage, including the legal right to divert an adequate supply of water physically available. As discussed below, the stream environment described in Section 3.3 would be affected as a result of the added water use at the Village and Ski Area.

A.2.3.1 *Water Rights*

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.

Plans for augmentation, approved by the Water Court, are the means that allow junior water rights to continue to divert during times when they would otherwise be curtailed (in order to satisfy more senior rights) by supplying water to offset the depletions to the stream system that their use creates. By doing this, depletions to the stream flow are mitigated and the senior water rights are not injured. Augmentation plans may use foreign water imported into the basin as a replacement for depletions, or may use credits made available through the removal from use of another in-basin water right or rights.

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. The water rights proposed for use at the Village and at the Ski Area are listed in Table A.2.3-1. The uses decreed to the rights include "*municipal, domestic, industrial, commercial, irrigation of up to 25 acres, piscatorial, recreational, culinary, sanitary, sewage treatment and disposal, and all other beneficial uses, including making releases for augmentation, exchange, replacement or substitution purposes, but not including artificial snowmaking*." (Decree, Case No. 87CW7). The water rights granted in the case include three conditional direct flow water rights for the North and South Infiltration Galleries and the Village Ditch, and five conditional exchange rights.

Table A.2.3-1. Leavell-McCombs Joint Venture (LM) and Wolf Creek Ski Area (WC) Water Rights, Case No. 87CW7

Name	Source	Amount	Adjudication Date	Appropriation Date	Type
North Infiltration Gallery (LM)	North Branch of Pass Creek	2 cfs	12/31/1987	4/15/ 1987	Conditional
South Infiltration Gallery (LM)	South Branch of Pass Creek	2 cfs	12/31/1987	4/15/ 1987	Conditional
Village Ditch (LM)	Unnamed Tributaries of Pass Creek	1.34 cfs	12/31/1987	4/15/ 1987	Conditional
Ski Area Pipeline (WC)	Unnamed Tributary of Pass Creek	0.39 cfs	Unknown	12/31/1985	Absolute
William Creek Squaw Pass Diversion (WC)	William Creek	0.5 af/yr (see note)	4/19/1962	9/9/1937	Absolute
Exchange #1 (LM/WC)	(see note)	19.3 af/yr	12/31/1987	4/15/ 1987	Conditional
Exchange #2 (LM/WC)	(see note)	25.7 af/yr 34.3 af/yr	12/31/1987 12/31/1987	4/15/ 1987 11/30/1989	Conditional Conditional
Exchange #3 (LM/WC)	(see note)	0.5 af/yr	12/31/1987	4/15/ 1987	Conditional
Exchange #4 (LM/WC)	(see note)	11.7 af/yr	12/31/1987	12/27/ 1990	Conditional
Exchange #5 (LM/WC)	(see note)	45.0 af/yr 16.0 af/yr	12/31/1987 12/31/1987	4/15/ 1987 11/30/ 1989	Conditional

Notes: Wolf Creek Ski Area owns 0.5 acre-feet diverted pursuant to the Wouldiams Creek Squaw Pass Diversion which is decreed for 10 cfs from Wouldiams Creek.

Exchange #1 is of water obtained from the San Luis Valley Water Conservancy District for replacement of out-of-priority uses and for the reach from the confluence of the Rio Grande and the South Fork of the Rio Grande to each of the applicant's points of diversion (North and South Infiltration Galleries, Village Ditch, Village Pond and Ski Area Pipeline).

Exchange #2 is of water obtained from the San Luis Valley Water Conservancy District for filling and refilling the Village Pond and for the same stream reach as Exchange #1.

Exchange #3 is of water obtained from the William Creek Squaw Pass Diversion for the same stream reach as Exchange #1.

Exchange #4 is of water obtained from the San Luis Valley Water Conservancy District for the same stream reach as Exchange #1.

Exchange #5 is of water stored in the Reclamation Pond from the point of discharge of said Reclamation Pond to the North and South Infiltration Galleries, Village Ditch and Village Pond. The amount of this exchange is included in the cumulative 79.8 acre-feet per year decreed to the first three exchange rights.

In addition to granting the new water rights, the Water Court in Case No. 87CW7:

- confirmed an absolute direct flow water rights for the Ski Area Pipeline (0.39 cfs appropriated December 31, 1985)
- granted a change of use of the William Creek Squaw Pass Diversion right from irrigation to all the uses required for the Village and Ski Area
- amended the decree in Case No. 84CW16 to change the use of the Pine River Weminuche Pass Ditch (PRWPD) (Table A.2.3-2) to allow the PRWPD water to be used for augmentation of the proposed Village and Ski Area uses
- granted approval of a plan for augmentation to replace out-of-priority depletions due to uses at the Village and at the Ski Area
- approved a plan of substitute supply to allow diversions at the South Infiltration Gallery by providing a substitute supply to the Colorado Division of Wildlife (CDOW) Alberta Park Reservoir located on the South Branch of Pass Creek

Table A.2.3-2. San Luis Valley Water Conservancy District Water Rights in the Pine River Weminuche Pass Ditch

Name	Source	Amount	Adjudication Date	Appropriation Date	Type
Pine River Weminuche Pass Ditch – Priority 1965-13	Pine River	6 cfs	3/07/1966	10/11/1934	Absolute
Pine River Weminuche Pass Ditch – Priority 1965-14	Pine River	6 cfs	3/07/1966	11/02/1934	Absolute
Pine River Weminuche Pass Ditch – Priority 1965-19	Pine River	6 cfs	3/07/1966	6/30/1936	Absolute

Note: The Pine River Weminuche Pass Ditch water rights were changed to allow augmentation of depletions for new well construction within the San Luis Valley Water Conservancy District in Case No. 84CW16, Water Division No. 3.

By contract dated May 24, 1991 the San Luis Valley Water Conservancy District provides imported trans-basin water from this system to the Leavell-McCombs Joint Venture. The decree in Case No. 87CW7, Water Division No. 3 allows the use of the Pine River Weminuche Pass Ditch imports for augmentation of depletions at the Village at Wolf Creek and at the Wolf Creek Ski.

The plan for augmentation decreed in Case No. 87CW7 would replace all depletions resulting from use of the water rights of the Village and Ski Area listed in Table A.2.3-1. Water imported into the Rio Grande basin by the PRWPD from tributaries of the Colorado River would be used to augment those depletions, allowing the Village and Ski Area to continue to utilize their water rights when they would otherwise be out-of-priority. PRWPD diversions are owned by the San Luis Valley Water Conservancy District (SLVWCD) and are governed by the decree of the District Court, Water Division No. 3, State of Colorado in Case No. 84CW16. Depletions resulting from water use at the Village and Ski Area would continue downstream to the Rio

Grande at South Fork, Colorado, at which point the PRWPD replacement supply is made available to mitigate the out of priority depletions. The affected reach includes Pass Creek and the South Fork of the Rio Grande.

Streamflow depletions caused by water use at the Village and Ski Area would affect the Colorado Water Conservation Board (CWCB) minimum in-stream flow right on Pass Creek (Case No. 89CW9), the CDOW's Alberta Park Reservoir storage right on the South Branch of Pass Creek, and the U.S. reserved rights on Pass Creek (Case No. 81CW183). Stipulations were reached between the Joint Venture and the Ski Area (as co-applicants in Case No. 87CW7) and the CWCB and CDOW (as objectors to the case) allowing the use of the proposed water rights and augmentation plan decreed in Case No. 87CW7, subject to certain limiting conditions to prevent injury to the rights of the CWCB and CDOW.

The CWCB stipulation allows the first 45.5 acre-feet per year of diversions from the North Branch of Pass Creek to be considered to be senior in priority to the CWCB's in-stream flow right. Other conditions allow diversions from the North Branch in excess of the 45.5 acre-feet per year provided that certain specific conditions are met, namely that treated wastewater released from storage in the Reclamation Pond be returned to the North Branch within 10 feet of the North Infiltration Gallery point of diversion.

The stipulation with the CDOW allows the use of the Village and Ski Area rights, subject to certain terms and conditions necessary to protect the Alberta Park Reservoir rights on the South Branch of Pass Creek, which are senior to the rights of the Village and Ski Area.

The U.S. reserved right has a quantification point located on Pass Creek 100 feet (30 m) upstream of the confluence of Pass Creek and the South Fork of the Rio Grande in Section 9, Township 38 North, Range 2 East of the New Mexico P.M. The water rights Decreed in Case No. 87CW7 were determined to be senior to the U.S. rights on Pass Creek with the U.S. Decree in Case No. 81CW183 stating "*The rights decreed in Case No. 87CW7 are senior in priority to the water rights decreed herein and have no material adverse effect on the amount of water available to the instream flow rights of the United States.*" (Decree, Case No. 81CW183).

The water rights listed previously in Table A.2.3-1 include appropriative rights of exchange - the right to divert water at an upstream location based on the provision of a substituted supply of water at a downstream location. The river segment between the two points is referred to as the "exchange reach".

Exchanges reduce the physical flow of water within the exchange but keep the stream whole below the downstream point so that downstream water rights are not injured. Water rights which divert from the stream in the exchange reach, and which are senior to the exchange right, are also protected. In order to do this, the more junior exchange right would be curtailed to the degree necessary to prevent the streamflow from being reduced to the detriment of the senior right. In the extreme case that the intervening senior can divert all of the physical supply of water, the exchange would not be allowed to operate.

The maximum volume of water exchanged under Exchanges 1, 2, 3, and 5, listed in Table A.2.3-1, is 79.8 acre-feet per year. Exchange 4 may appropriate up to 11.7 acre-feet per

year. The cumulative maximum rate of exchange at which all five exchange rights may occur is 10 cfs.

In addition to the water rights owned by the project applicants, the Applicant has a contract right for foreign water decreed to the PRWPD and owned by the SLVWCD. The PRWPD was decreed for augmentation use in Case No. 84CW16. As foreign water imported into the Rio Grande Basin, it may be fully consumed without injury to other water rights, or may be made available to replace out-of-priority depletions of other water rights in a plan for augmentation. The decree in Case No. 87CW7 specifically authorizes use at the Village and Ski Area including augmentation of out-of-priority depletions.

The contract for the PRWPD water provides for up to 31 acre-feet of water to be used to offset the maximum annual depletion (24.8 acre-feet) at the Village and Ski Area. The Joint Venture also "*has the right to purchase an additional quantity of water, not to exceed 300 acre-feet over any 15-year period or 50 acre-feet in any one year, for use for exchange, replacement, augmentation and substitution in connection with its proposed development and the operation of the Village Pond and Reclamation Pond*." (Decree, Case No. 87CW7) If the water system proposed for the Village was not constructed, the trans-basin imports from the PRWPD would continue as they have historically, however, uses would be for other augmentation purposes in the Rio Grande basin.

The decree in Case No. 87CW7 states that "*The Joint Venture's Contract with the District* (the SLVWVD) *would provide a reliable source of water…to satisfy the water requirements of the Village at Wolf Creek and the Wolf Creek Ski Area as described in this Decree.*" It appears that 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.

A.2.3.2 *Water Use*

The proposed development of 287.5 acres at the Village 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 at build-out 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. Descriptions and numerical citations in this section have been revised from the values cited in the decree to reflect the proposed use of raw water storage tanks instead of the pond. The revised water use projection is less than contemplated in the Decree in Case No. 87CW7. Therefore, the water rights granted therein would be adequate for the lower water use projection resulting from removal of the Village Pond and its evaporation.

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 total of 1,748 equivalent residential units (EQR's) are proposed with one EQR representing the equivalent water use of one single family residential unit. Table A.2.3-2 summarizes the planned development according to information extracted from the decree in Case No. 87CW7. As shown in the table, approximately 68 percent of the service population would be condominium residents. The next largest fraction, 10 percent, would be hotel occupants. Single family residential occupancy (single family homes and duplexes) would represent 8 percent of the service population, and Village employees would account for slightly more than 6 percent. The remaining 8 percent would be associated with apartment and clustered home dwellings, and commercial development.

Table A.2.3-2. Proposed Development The Village at Wolf Creek

Use	Number of Units	EQR's per Unit	Total EQR's	Population per Unit[a]	Total Population	Percent of Population
Residential – Single Family	71	1	71	3.5	249	4.0%
Residential – Duplex	72	1	72	3.5	252	4.1%
Residential – Condominium	1,483	0.8	1,186	2.8	4,152	67.9%
Residential – Employee	220	0.5	110	1.75	385	6.3%
Apartments	87	0.4	35	1.4	122	2.0%
Cluster Housing	34	0.7	24	2.45	83	1.3%
Hotel	440	0.4	176	1.4	616	10.1%
Dude Ranch	37	0.6	22	2.1	78	1.3%
Commercial	259,200 square-feet	1 EQR per 5,000 square feet	52	3.5	182	3.0%
		Totals	1,748		6,119	100.0%

[a] EQR per unit times 3.5 persons per EQR

Though not stated explicitly in the decree, it appears that assumptions regarding monthly occupancy rates are contained in the development proposal. Table A.2.3-3 shows a determination of monthly occupancy based on information found in the decree in Case No. 87CW7. Table A.2.3-3 also shows the equivalent monthly population at the Village expected to be served based on those occupancy rates.

Table A.2.3-3. Occupancy Rates and Populations The Village at Wolf Creek

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Occupancy	85%	85%	85%	52.5%	20%	35%	50%	50%	35%	20%	52.5%	85%
Population	5,200	5,200	5,200	3,210	1,225	2,140	3,060	3,060	2,140	1,225	3,210	5,200

In addition to the Village water use information, the 87CW7 decree contains water use information for the Ski Area. The Ski Area's potable water requirements were based on 12.5 gallons per skier per day times 360,000 skier days per year, and were distributed monthly for the period of November through April. It appears that roughly the same occupancy rate distribution as shown for the Village was used for the Ski Area during those months. Table A.2.3-4 shows the service population anticipated for the Ski Area.

Table A.2.3-4. Service Populations Wolf Creek Ski Area

	Jan	Feb	Mar	Apr	May-Oct	Nov	Dec	Total
Population	2,270	2,420	2,185	1,390	0	1,390	2,270	
Days	31	28	31	30	184	30	31	
Skier Days	70,370	67,760	67,735	41,700	0	41,700	70,370	359,635

The water supply demand for in-house use (residential and commercial) at the Village was calculated by the Applicant based on a unit use rate of 68 gallons per capita per day (gpcd) per EQR. *Design and Construction of Small Water Systems – A Guide for Managers*, (AWWA 1984) lists planning values for water use rates associated with many kinds of establishments. Table A.2.3-5 shows selected water use rates suggested by the American Water Works Association (AWWA) for uses similar to those being proposed at the Village.

Table A.2.3-5. Water Use Planning Guide – AWWA

Establishment	Water Use (gal/day)
Single Family Dwelling (per person)	50-75
Apartment (per person)	60
Hotel with private baths (per person)	60
Cottage, seasonal (per person)	50
Day worker (per person)	15
Store (per toilet room)	400
Restaurant w/ bar or lounge (per patron)	9-12

As shown in Table A.2.3-5, the range of use for residential single family development is 50 to 75 gpcd. Other types of uses (apartment, hotel, and cottage) range from 50 to 60 gpcd. Assuming that condominium water use is more comparable to apartment water use than to single family residential use, the project proponent's use of 68 gpcd is about 13 percent greater than the AWWA planning guide would suggest. For single family residential development 68 gpcd is in the range suggested by AWWA.

Table A.2.3-6 shows the distribution of monthly in-house demands according to the decree in Case No. 87CW7 for the Village and for the Ski Area. Irrigation and evaporation from the wastewater Reclamation Pond represent additional water demands. These demands are presented in Table A.2.3-7 and all water demands are combined as shown in Table A.2.3-8.

Table A.2.3-6. In-House Water Demand (Acre-Feet) The Village at Wolf Creek and Wolf Creek Ski Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Village	33.6	30.4	33.6	20.1	7.9	13.4	19.8	19.8	13.4	7.9	20.1	33.6	253.6
Ski Area	2.7	2.6	2.6	1.6	0	0	0	0	0	0	1.6	2.7	13.8
Total	36.3	33.4	36.2	21.7	7.9	13.4	19.8	19.8	13.4	7.9	21.7	36.3	267.4

Table A.2.3-7. Other Demands (Acre-Feet) The Village at Wolf Creek

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Irrigation	0	0	0	0	0	5.2	3.5	1.5	1.1	0	0	0	11.3
Evaporation	0	0	0	0	0.8	1.0	0	0	0	0	0	0	1.8
Total	0	0	0	0	0.8	6.2	3.5	1.5	1.1	0	0	0	13.1

Table A.2.3-8. Total Combined Demand (Acre-Feet) The Village at Wolf Creek and Wolf Creek Ski Area

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Village	33.6	30.4	33.6	20.1	8.7	19.6	23.3	21.3	14.5	7.9	20.1	33.6	266.7
Ski Area	2.7	2.6	2.6	1.6	0	0	0	0	0	0	1.6	2.7	13.8
Total	36.3	33.0	36.2	21.7	8.7	19.6	23.3	21.3	14.5	7.9	21.7	36.3	280.5

Irrigation use is computed based on a limit of 25 acres of irrigation using xeriscape principles and represents only about 4 percent of the projected water use at the Village. The decree in Case No. 87CW7 states that "*The irrigated land would be designed, planted, and maintained so as to require a maximum average annual application rate of 11.3 acre-feet.*"

Water used at the Village and at the Ski Area would be partly consumed and partly returned to the stream system. These two components are referred to as consumptive use and return flow. Consumptive use of in-house water use occurs primarily as a function of evaporation from toilets, laundry drying, cooking, and cleaning. A small amount is consumed by incorporation into plant and animal tissue. Indoor consumptive use at developments served by central wastewater collection systems is considered to be 5 percent, the value used by the applicants.

Outdoor consumptive use occurs through evaporation of water from the soil, from plant and water surfaces, and from the transpiration of water to the atmosphere by plants. Water consumptively used is removed from the basin and is therefore made unavailable to other water rights. Consumptive use from sprinkler irrigation is proposed to be 85 percent by the applicants, a value commonly accepted for such uses. Evaporation is a 100 percent consumptive use.

Return flows from in-house use are primarily due to flushing of toilets and disposal of water through drains. In-house return flows constitute 95 percent of in-house water use. Outdoor water use results in return flows in the form of surface runoff of irrigation water and water used for washing buildings, sidewalks, cars, etc., and from percolation into the ground of water not consumed by landscape plants. Outdoor water use results in return flows of 15 percent of the water used outdoors. Return flows re-join the stream system and are part of the supply provided to downstream water rights.

The uses proposed at the Village and at the Ski Area (286.5 acre-feet per year total) are expected to result in 24.8 acre-feet per year of consumptive use and 255.7 acre-feet per year in return flows. Table A.2.3-9 summarizes the proposed monthly use, consumptive use, and return flow as found by the Water Court in Case No. 87CW7 in units of acre-feet per month, cubic feet per second, and gallons per minute. Replacement of the 24.8 acre-feet of associated consumptive use would be provided by at least 31 acre-feet per year of fully consumable PRWPD imports. Overall, an excess of 25 percent of the total replacement need is available from the PRWPD source.

Table A.2.3-9. Use, Consumptive Use and Return Flow the Village at Wolf Creek and Wolf Creek Ski Area (Acre-Feet per Month)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Use	36.3	33.0	36.2	21.7	8.7	19.6	23.3	21.3	14.5	7.9	21.7	36.3	280.5
Consumptive Use	1.8	1.7	1.8	1.1	1.1	6.1	4.0	2.2	1.7	0.4	1.1	1.8	24.8
Return Flow	34.5	31.3	34.4	20.6	7.6	13.5	19.3	19.1	12.8	7.5	20.6	34.5	255.7
(Cubic Feet Per Second)													
Use	0.59	0.59	0.59	0.36	0.14	0.33	0.38	0.35	0.24	0.13	0.36	0.59	0.39
Consumptive Use	0.03	0.03	0.03	0.02	0.02	0.10	0.07	0.04	0.03	0.01	0.02	0.03	0.03
Return Flow	0.56	0.56	0.56	0.35	0.12	0.23	0.31	0.31	0.22	0.12	0.35	0.56	0.35
(Gallons Per Minute)													
Use	265	267	264	164	64	148	170	155	109	58	164	265	174
Consumptive Use	13	14	13	8	8	46	29	16	13	3	8	13	15
Return Flow	252	253	251	155	55	102	141	139	97	55	155	252	159

A.2.3.3 *Effects on the Environment*

Increased water use due to the potential development of the Village at Wolf Creek and additional skiers at the Wolf Creek Ski Area would result in reductions in flow between the proposed Village points of diversion and the wastewater treatment discharge. The reduction in stream flow in this reach would equal the amount of the use shown in Table A.2.3-9 and would vary from a low of 7.9 acre-feet (or 58 gallons per minute) during October to a high of 36.3 acre-feet (or 265 gallons per minute) during December and January.

Approximately 91 percent of the water used would be returned to the stream system through the wastewater treatment plant and through irrigation surface runoff and deep percolation return flows. Thus, the stream system from the wastewater treatment plant discharge to the Rio Grande at South Fork, Colorado, would experience a reduction in stream flow equal to the consumptive use shown in Table A.2.3-9 varying from 0.4 acre-feet (3 gallons per minute) during October to 6.1 acre-feet (46 gallons per minute) during June.

The augmentation plan decreed in Case No. 87CW7 provides that the replacement water to mitigate for the new consumptive use shown in Table A.2.3-9 would be provided at the confluence of the Rio Grande and the South Fork of the Rio Grande at South Fork, Colorado. Thus, the stream flow of the Rio Grande below South Fork, Colorado, would be unchanged.

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. Such resolution could include: (1) obtaining greater water rights; (2) reduced Village development; and/or (3) some combination of these two measures.

A.2.4 Vegetation Communities

It is likely that NFS habitats adjacent to and downstream of the private property would be affected to some extent by private land development activities. Such cumulative activities/effects would primarily influence the wildlife community. As such, they are discussed under the Animal Communities section. However, 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 would quickly attenuate with increasing distance. Pollutants affecting aquatic and riparian vegetation could extend further off-site, 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 4.4-1 in Chapter 4) would be affected.

It is assumed that all 138 acres of spruce-fir forest on the private parcel would be lost to development (Table A.2.4.1-1). The Preliminary Development Plan (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 *Clean Water Act* (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.

Table A.2.4.1-1. Acreage, type, and Habitat Structural Stage to be Affected by Private Wolf Creek Village Development under Alternatives 1-4.

Land (Habitat Type-Structural Stage[a])	Acreage			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
PRIVATE LAND				
Spruce-fir (4A[b] and 4B[c])	138 [d]	138 [d]	138 [d]	138 [d]
Mountain grassland (ski trails)	58 [e]	0 [e]	0 [e]	0 [e]
Shrubby and herbaceous wetlands and mountain grassland	93 [f]	0 [f]	0 [f]	0 [f]
Total	**288**	**138 [d]**	**138 [d]**	**138 [d]**

[a] After Hoover and Wills (1984).
[b] Mature, open canopy.
[c] Mature, closed canopy.
[d] 138 acres of spruce-fir forest is present on the private parcel. 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. As a result, it will be assumed that all 138 acres of spruce-fir forest would be lost.
[e] 57 acres of existing ski trails extend onto the private parcel. It is assumed that to maximize ski in-ski out options, none of this habitat would be directly affected by secondary development.
[f] 93 acres of shrubby and herbaceous wetlands and some mountain grassland are present on the private parcel. It is assumed that the vast majority of wetlands would be restricted from development as part of the 404 permitting process. It is also assumed that most of the mountain grassland would be developed, but it is unclear how much based on the PDP. Mountain grassland represents a small proportion of these 93 acres.
Note: It is assumed that private parcel development would be the same under all alternatives based on direction provided to the USFS by Leavell-McCombs Joint Venture. This table is provided primarily to quantify direct habitat losses and does not consider adjacent losses to habitat value associated with fragmentation, perforation, and human activity effects.
Source: Tetra Tech and Western Ecosystems, Inc.

A.2.5 Animal Communities

A.2.5.1 *General Fish and Wildlife*

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 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.

Impacts would attenuate beyond the private parcel, but some would be extensive. 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, all-terrain-vehicles [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 plant and 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.2.5.2 *Management Indicator Species*

Brown Creeper

Stands of the primary habitat structural stage (HSS) that this species is associated with are present on and contiguous with the private parcel, and creepers have been detected in these stands. The Village development would eliminate virtually all (≤138 acre) effective habitat for this species on the private parcel as a result of direct habitat conversion, fragmentation effects, and human activities. This effect on private land has no bearing on *National Forest Management Act* (NFMA) directives and applicable Forest Plan objectives, standards, and guidelines, which are considered on NFS lands only. However, it is likely that some creeper territories on the private parcel extend onto suitable, contiguous NFS lands, and birds using such territories would be affected by habitat conversion on a portion of their territory. Loss of occupied habitat and the displacement of resident birds on the private parcel would result in locally increased territory competition and a reconfiguration of existing territories. This territorial flux would extend over the habitat conversion period of the Village development. However, no habitat conversion would occur on the contiguous NFS lands and because of multiple variables involved, the extent of reduced habitat effectiveness is unclear, probably ranging from zero to several affected territories, possibly with no net loss of territories on the Forest. Cumulative effects of the Village development on creeper habitat on contiguous NFS lands would result in insignificant and discountable reductions to this species' Forest-wide population, habitat distribution, and trend.

Hermit Thrush

Stands of the primary HSS that this species is associated with are present on and contiguous with the private parcel and hermit thrushes have been detected in these stands. The Village

development would eliminate virtually all (≤138 acre) effective habitat for this species on the private parcel as a result of direct habitat conversion, fragmentation effects, and human activities. This effect on private land has no bearing on NFMA directives and applicable Forest Plan objectives, standards, and guidelines, which are considered on NFS lands only. It is likely that some creeper territories on the private parcel extend onto suitable, contiguous NFS lands, and birds using such territories would be affected by habitat conversion on a portion of their territory. Loss of occupied habitat and the displacement of resident birds on the private parcel would result in locally increased territory competition and a reconfiguration of existing territories. This territorial flux would extend over the habitat conversion period of the Village development. However, no habitat conversion would occur on the contiguous NFS lands and because of multiple variables involved, the extent of reduced habitat effectiveness is unclear, probably ranging from zero to several affected territories, possibly with no net loss of territories on the Forest. Cumulative effects of the Village development on hermit thrush habitat on contiguous NFS lands would be insignificant and discountable reductions to this species' Forest-wide population, habitat distribution, and trend.

Lincoln's Sparrow

The Village development would likely have little affect on the habitat of this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the CWA. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. Any impacts to the Lincoln's Sparrow would be insignificant.

Wilson's Warbler

The Village development would likely have little affect on the habitat of this species on the private parcel because such habitats and surrounding buffer zones would be protected by provisions of the CWA. Reduced habitat effectiveness as a result of adjacent human activities and dispersed recreation would likely be confined to the private parcel. Any impacts to the Wilson's Warbler would be insignificant.

Rocky Mountain Elk

The Village development and associated seasonal activities that would occur 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. While the private parcel and contiguous habitats primarily provide summer range, with more limited use as spring and fall transitional range, dispersed recreational activities (e.g., new mountain bike, hiking, equestrian, and ATV trails) could affect these habitats and calving areas in a large area of the surrounding landscape. Much greater, year-round human presence in the landscape would result in greater vehicular use of secondary and backcountry roads, which would reduce elk habitat effectiveness in adjacent habitats. Elk highway mortality along Highway 160 and other high-speed highways would increase as a direct result of commuting residents, guests, construction personnel, resort employees, other infrastructure support personnel and their families in the landscape between regional airports (e.g., Durango and Alamosa) and the most distal commuting destinations. The additional off-site

commercial, residential, and municipal infrastructure required to support such a large, year-round development would result in additional habitat loss, both direct, through habitat conversion, and indirect, through wildlife displacement from human activity areas, at lower elevations that would likely affect some elk winter ranges, although more of these effects would occur off the Forest. However, any cumulative effects from the Village would be unlikely to be discernable from other variables and would not measurably affect the population, trend, or habitat distribution of elk across the RGNF.

Mule Deer

The Village development would completely displace all seasonal deer use from the private parcel and reduce deer habitat effectiveness in a considerable area of surrounding NFS lands. Habitat effectiveness would reduce an area far greater than the private parcel, though not as large of an area as that reduced for elk. While the private parcel and contiguous habitats primarily provide summer range, with more limited use as spring and fall transitional range, dispersed recreational activities (e.g., new mountain bike, hiking, equestrian, and ATV trails) may affect these habitats and calving areas in a large area of the surrounding landscape. Much greater, year-round human presence in the landscape would result in greater vehicular use of secondary and backcountry roads, which would reduce elk habitat effectiveness in adjacent habitats. Deer highway mortality along Highway 160 and other high-speed highways would increase as a direct result of commuting residents, guests, construction personnel, resort employees, other infrastructure support personnel and their families in the landscape between regional airports (e.g., Durango and Alamosa) and the most distal commuting destinations. The additional off-site commercial, residential, and municipal infrastructure required to support such a large, year-round development would result in additional habitat loss, both direct, through habitat conversion, and indirect, through wildlife displacement from human activity areas, at lower elevations that would likely affect some deer winter ranges, although more of these effects would occur off the Forest.

Rio Grande Cutthroat Trout

Likely effects extending onto the NFS from the Village development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. 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 diversions could adversely affect streamflows, eliminate overwintering habitat, and lead to more concentrated effluent discharge effects (i.e., reduced dilution). Reduced infiltration could affect seasonal stream flows. Greater fishing pressure at Alberta Park Reservoir would likely result in greater mortality of the 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. Transbasin diversion effects (see brook trout section, below) would affect stream channels and riparian areas in East Fork Pass Creek (i.e., below the wastewater discharge point) and lower reaches of Pass Creek, which do not currently support viable populations of Rio Grande Cutthroat Trout.

While cumulative effects of the Village could adversely affect Rio Grande cutthroat trout, they would be unlikely to adversely affect the population, trend, or aquatic habitat distribution of the species across the RGNF. The local the Rio Grande cutthroat trout population in Alberta Park Reservoir and West Fork Pass Creek was introduced and is maintained as a sport fishery by CDOW stocking. While that population could be affected by the Village affects, CDOW management could be adjusted, if desired, to compensate for adverse effects and maintain this population. The same situation holds for Pass Creek, downstream from the project area, where adverse effects resulting from the Village development are possible, but unlikely. Rio Grande cutthroat trout are not present in East Fork Pass Creek, but that stream likely represents historic habitat and potential future habitat of the Rio Grande cutthroat trout. The Village effects may perturb this stream, but it would likely remain viable as future habitat, if CDOW management so decides.

Brook Trout

Likely effects extending onto the NFS from the Village development could affect this species and its occupied and potential habitats on the private parcel and on downstream NFS lands. Likely indirect effects to NFS lands include water quality and aquatic habitat degradation, resulting from wastewater discharge and unintended toxic runoff (e.g., from roads and other impermeable surfaces, snow storage, pet waste, chemical spills, equestrian facilities, herbicides, pesticides, fertilizer, 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 could adversely affect streamflows, eliminate overwintering habitat, affect spawning success, and lead to more concentrated effluent discharge effects (i.e., reduced dilution). 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. Transbasin diversions have been found to cause extensive damage to stream channels and riparian areas through channel modification. As more water is added to the existing stream channels, they must adjust in size to accommodate the increased volumes. Scouring and erosion are the resulting mechanisms that enlarge channels to accommodate flows. The result is often an over-wide channel with poor aquatic habitat and reduced riparian areas throughout the length of the effected stream. Reduced infiltration could also affect seasonal stream flows, exacerbating water quality effects.

While cumulative effects could adversely affect brook trout, they would not adversely affect the population, trend, or aquatic habitat distribution of the species across the NFS lands, although local populations could be adversely affected. CDOW management of local populations could

be adjusted to a certain extent, if desired, to compensate for adverse the Village effects and maintain all local populations.

A.2.5.3 *Region 2 Sensitive Animal Species*

In summary, notwithstanding the loss of occupied and/or potential habitats for some R2 sensitive animal species on the private parcel, cumulative effects of the Village development extending onto the surrounding NFS lands 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, 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 in Chapter 4). 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. The Village development would have no impact on any other R2 animal species on the RGNF, as they have no habitat in the project area.

Rio Grande Cutthroat Trout

Likely cumulative Village 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 sedimentation and other effects could extend downstream.

Boreal Western Toad

The ephemeral pond straddling the private/NFS property line represents potentially suitable, albeit unoccupied, boreal toad breeding habitat. Cumulative Village at Wolf Creek effects would likely degrade the suitability of this pond for future breeding as a result of unintended runoff, trampling, amphibian collection, mortality from stray pets, etc.

Northern Leopard Frog

The ephemeral pond straddling the private/NFS property line represents potentially suitable, albeit unoccupied, northern leopard frog breeding habitat. Cumulative Village at Wolf Creek effects would likely degrade the suitability of this pond for future breeding as a result of unintended runoff, trampling, amphibian collection, mortality from stray pets, etc.

Northern Goshawk

Habitat loss, fragmentation effects, and human activities associated with private land development could result in the net loss of approximately 138 acres of occupied foraging and nesting habitat on private land, adversely affecting goshawk habitat effectiveness on private and NFS lands adjacent to the private parcel. It is unlikely that activities extending from the private parcel onto the Forest would result in habitat modifications that would affect the prey base for this species. The creation of defensible space from wildfires around residences should not extend onto the Forest. 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.

Northern Harrier

Because of habitat loss, fragmentation 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 habitats would be avoided by and buffered from development. These effects are considered insignificant and discountable.

American Peregrine Falcon

Potential habitat loss, fragmentation 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 on 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.

Boreal Owl

Habitat loss, fragmentation effects, and human activities associated with private land development would result in the net loss of approximately 138 acres of occupied foraging and nesting habitat on private land. This is a relatively large block of habitat that may overlap the boundaries of several territories. Boreal owl habitat effectiveness (i.e., foraging and nesting habitat) could also be adversely affected on 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 for this species. The creation of defensible space from wildfires around residences should not extend onto the Forest. Stray cats would extend onto the Forest and would compete with owls for small mammals and birds. It is unknown to what extent stray cats would contribute to, or adversely affect, the local prey base. These effects are considered insignificant and discountable.

Three-toed Woodpecker

Habitat loss, fragmentation effects, and human activities associated with private land development would result in the net loss of approximately 138 acres of occupied foraging and nesting habitat on private land. This is a relatively large block of habitat that likely overlaps the

boundaries of several territories. It is likely that some of these territories extend beyond the private parcel onto contiguous, similar quality NFS lands. Loss of occupied habitat and the displacement of resident birds on the private parcel would result in locally increased territory competition and a reconfiguration of existing territories. This territorial flux would extend over the build-out period of the private development. 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 for this species. The creation of defensible space from wildfires around residences should not extend onto the Forest. This species is less susceptible to mortality from domestic cats straying onto the Forest, and such cats would not affect the prey base of this species. These cumulative effects extending onto the Forest are considered insignificant and discountable.

Olive-sided Flycatcher

Habitat loss, fragmentation effects, and human activities associated with private land development would result in the net loss of approximately 138 acres of occupied and potential foraging and nesting habitat on private land. This is a relatively large block of habitat that likely overlaps the boundaries of several territories. It is likely that some of these territories extend beyond the private parcel onto contiguous, similar quality NFS lands. Loss of occupied habitat and the displacement of resident birds on the private parcel would result in locally increased territory competition and a reconfiguration of existing territories. This territorial flux would extend over the build-out period of the private development. These cumulative effects extending onto the Forest are considered insignificant and discountable.

American Marten

Because of habitat loss, fragmentation and perforation effects, and human activities associated with the Village development, marten 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 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. Because of the relatively large size of marten territories, the spatial loss of this occupied habitat patch and the displacement of resident animals on the private parcel would result in locally increased territory competition and a reconfiguration of existing territories in a relatively large surrounding area. This territorial flux would extend over the build-out period of the private development. It is unlikely that the Village development would directly affect any den site or result in habitat modifications that would affect the prey base for this species. Increased vehicular use on Highway 160, directly attributable to the private development, would increase roadkill probabilities.

North American Wolverine

Because of indirect habitat loss, fragmentation and perforation effects, and human activities associated with private land development (cumulative effects), 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. This species would also likely avoid the entire project area and

would avoid crossing the Highway 160 corridor in its present configuration and level of use. If wolverines remain in the Southern Rockies, increased vehicular use on Highway 160, directly attributable to the private development, would increase roadkill probabilities and further impair habitat connectivity and population persistence.

A.2.5.4 *Threatened, Endangered, and Candidate Animal Species*

Colorado Pikeminnow and Razorback Sucker

Water required for full development of the Village would come from existing infiltration galleries in two creeks (East Fork and West Fork Pass Creek) on the private parcel. There are no water depletion issues involving federally endangered fish on the East Slope (Gelatt 2004). However, to avoid out-of-priority depletion effects to downstream water users, these withdrawals would be augmented. Leavell-McCombs has a contract for the SLVWCD to supply up to 31 acre-feet of base water supply to offset the maximum annual depletions associated with the Village and the Ski Area under the plan for water augmentation in case 87CW7. In addition, Leavell-McCombs has the right to purchase an additional quantity of water, not to exceed 300 acre-feet of water over any 15-year period (an average of 20 acre-feet per year) or 50 acre-feet in any one year, for exchange, replacement, augmentation, and substitution in connection with the Village development and associated ponds (Decree 87CW7). The SLVWCD obtains this augmentation water from West Slope (Colorado River) waters via a transbasin diversion.

Because Colorado River water depletions via the PRWPD to SLVCWD will occur independently of the Federal action, there are no cumulative effects from the Village water augmentation under any of the alternatives.

Bald Eagle

No suitable bald eagle habitat is present on the Village at Wolf Creek parcel, although potential habitat occurs nearby that could possibly be influenced by effects extending from the Village. Alberta Park Reservoir, located adjacent to the project area, supports a healthy brook trout population that could represent a potential foraging area that 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 from this reservoir (D. Pitcher, WCSA, pers. comm.) 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 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.

Canada Lynx

Cumulative Effects Defined

For section 7 consultation, cumulative effects are defined as those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation. [50 CFR §402.02]

Cumulative effects do not include any past or ongoing actions, but "involve only future non-Federal actions: past and present impacts of non-Federal actions are part of the environmental baseline." (emphasis in original, United States Fish and Wildlife Service [USFWS] and National Marine Fishery Service [NMFS] 1998). "Future Federal actions requiring separate consultation (unrelated to the proposed action) are not considered in the cumulative effects section" (USFWS and NMFS 1998):

> "[s]ince all future Federal actions would at some point be subject to the section 7 consultation process pursuant to these [ESA] regulations, their effects on a particular species would be considered at that time and would not be included in the cumulative effects analysis. However, those future State or private actions (i.e., no Federal agency involvement) that are "reasonably certain to occur" must be factored into section 7[a][2] evaluations. (51 FR 19933)

Section 7 only requires consideration of those future private actions that are reasonably certain to occur.

> Indicators of actions 'reasonably certain to occur' may include, but are not limited to: approval of the action by State, tribal or local agencies or governments (e.g., permits, grants); indications by State, tribal or local agencies or governments that granting authority for the action is imminent; project sponsors' assurance the action would proceed; obligation of venture capital; or initiation of contracts. The more state, tribal or local administrative discretion remaining to be exercised before a proposed non-Federal action can proceed, the less there is a reasonable certainty the project would be authorized. Speculative non-Federal actions that may never be implemented are not factored into the 'cumulative' effects' analysis. (USFWS and NMFS 1998)

However, although "there must exist more than a mere possibility that the action may proceed, 'Reasonably certain to occur' does not mean that there is a guarantee that an action would occur" (51 FR 19926, 51 FR 19933).

The USFWS has interpreted the term "reasonably certain" to exclude actions "where proposals have been made, or implementation schedules have been established," if no other action has taken place (51 FR 19933). The USFWS determined that including such actions, which have not progressed beyond the "mere possibility" stage:

> …would open the door for speculative actions to be factored into the cumulative effects analysis, adding needless complexity into the consultation process and threatening potential Federal actions which pose minimal adverse impacts of their own with possible 'jeopardy' opinions due to speculative, State or private projects that may never be implemented. (51 FR 19926, 51 FR 19933).

There are additional practical reasons for this limitation. Unless a proposed action has been defined and fleshed out, identification of its likely impacts to listed species (e.g., development of a parcel of land where there is no development plan) would be wholly conjectural and at the discretion of the agency.

Table A.2.5-1. Acreage of Net Lynx Habitat Modifications Private the Village Lands by Alternatives 1-4.

Lynx Habitat [a]	Acreage			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	the Village LANDS			
Winter Foraging	-140	-140	-140	-140
Denning	0	0	0	0
Other	-1	-1	-1	-1
Non-habitat	0	0	0	0
Suitable	0	0	0	0
Unsuitable	+141	+141	+141	+141

[a] See text or USFS (2004) for definitions.
Source: Western Ecosystems, Inc.

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 (Figure A.2.5-1). This issue is addressed in detail in Section 4.5 as part of the Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000) consistency analysis, where consideration of cumulative effects is required.

Migratory Birds

See the migratory bird account in Section 4.5.

A.2.6 Land Use and Tenure

The NFS lands surround the NFS permitted Ski Area and the Village property which lies within the permitted ski area boundary. The NFS maintains a scenic easement throughout the Village property and an access easement along FSR 391 to Alberta Lake for recreational users (USFS 1986a). The scenic easement provides the NFS the right to enter the property to ensure compliance of any future development with the scenic easement. FSR 391 currently provides the only access road to the Village property and to Alberta Lake. The property owner has through 2009 to apply to the NFS for a change of route for FSR 391 (Ferguson 2003). Until a change of route has been applied for by the property owners and approved by the NFS, use of FSR 391 must be in accordance with the current access easement restrictions. The NFS easement limits vehicular traffic by limiting the size of vehicle and the time of the year vehicles can access the property. The easement also specifies that the road cannot be cleared of snow due to its use by recreational skiers (USFS 1986a).

Although the NFS acknowledged a proposed similar use designation for the Village property with the existing land use of the Ski Area in the *Environmental Assessment for the Proposed Wolf Creek Land Exchange* (USFS 1986a), there is currently a legal dispute concerning the addition of mixed-use facilities as proposed by the private property owners to the current Ski Area Permit as approved by the USFS.

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 private 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.

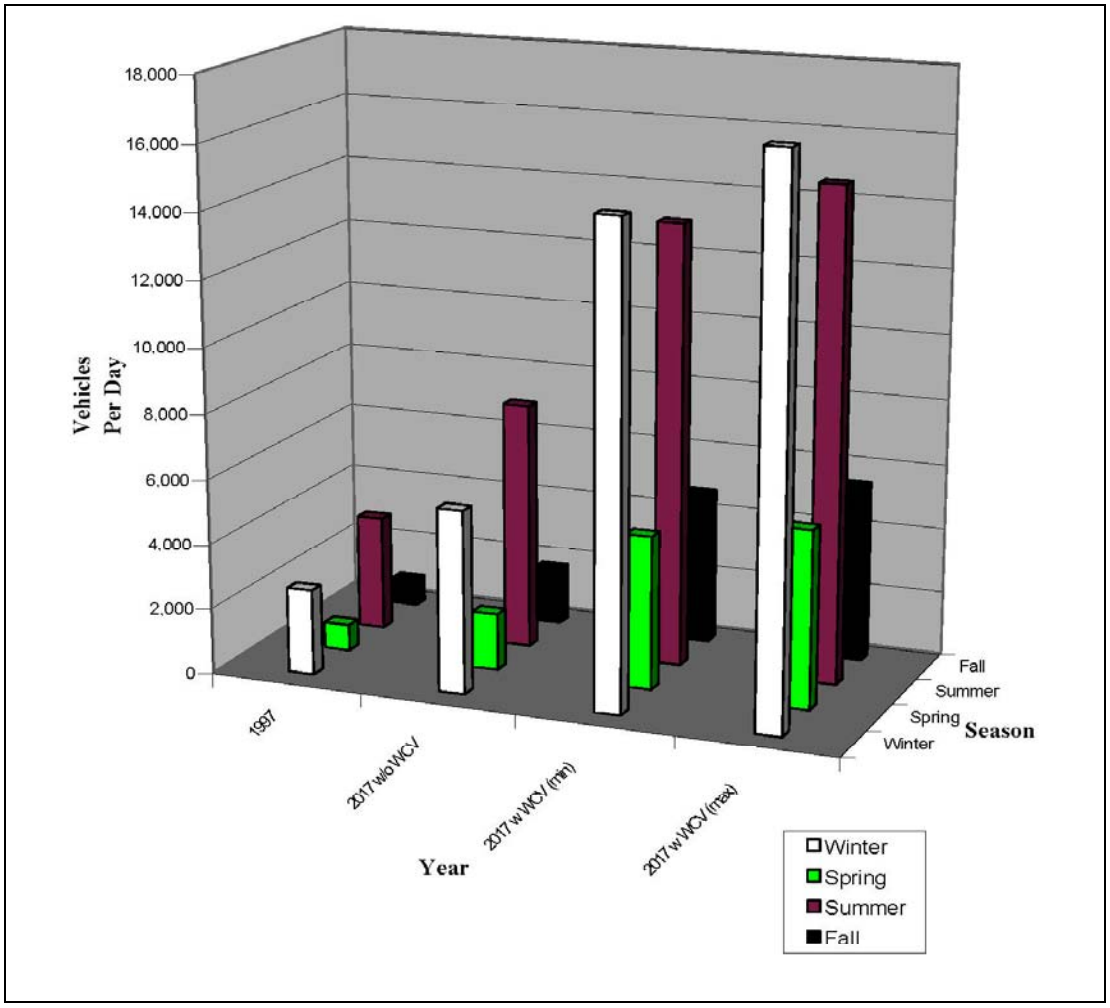

Figure A.2.5-1. Highway 160 Traffic Projections.

A.2.7 Scenic Resources

A.2.7.1 *Environmental Consequences*

Although the subject private property is not subject to the same management objectives for scenery as other NFS lands surrounding it, the Scenery Management System has been tested and is a proven system used to administer prescriptions on lands entirely surrounding the subject

property. In addition, 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 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).

The private property has no Scenic Integrity Objectives (SIOs) attached to it currently; however, the Village development would affect the surrounding landscape character and Scenic Resources of USFS lands. 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 property would be visible from the four key viewsheds previously identified, the Continental Divide National Scenic Trail (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.

A.2.8 Recreation Resources

A.2.8.1 *Affected Environment*

It is important to note that the area of potential effect for recreation resources as it relates to the potential reasonably foreseeable future Village build-out is not the same as that described in Chapter 3. The area of potential effect when considering the Village includes all affected environment discussions from Section 3.8 as well as all lands directly adjacent to the Highway 160 corridor from Pagosa Springs, Colorado, on the west side of Wolf Creek Pass to South Fork, Colorado, on the east side of the pass. Recreational use across these lands varies, based on location, access, developed and dispersed recreation resources, and opportunities. Therefore, because an overview of the Ski Area and lands adjacent to the property are presented in Chapter 3, only an overview of the portions of the Highway 160 corridor that were not discussed in Chapter 3 are presented below. However, all environmental consequences discussed in the following section include impacts to the Highway 160 Corridor (from Pagosa Springs to South Fork, Colorado), the Ski Area, and lands adjacent to the property areas.

Highway 160 Corridor (Pagosa Springs to South Fork, Colorado)

Highway 160 from Pagosa Springs, Colorado, to South Fork, Colorado often provides recreation opportunities for individuals looking for scenic drives. Highway 160 gains several thousand feet in elevation and meanders past numerous easily viewable rock outcrops, waterfalls, lakes, and forested land on its way to Wolf Creek Pass before descending back to either town at the base of the pass. Most lands directly adjacent to Highway 160 have an Recreation Opportunity Spectrum (ROS) setting of Modified Roaded. Modified Roaded lands, like Roaded Natural

lands, are areas where there is an opportunity to get away from others, but with easy access. In addition, some self-reliance in using motorized equipment is necessary, and a feeling of independence and freedom can be achieved with little challenge or risk.

There are several frozen waterfall formations that attract ice climbers to both sides of Wolf Creek Pass and the immediate surrounding terrain in the winter. In the summer, Wolf Creek Pass and the Highway 160 corridor attract rock climbers to the various rock outcrops that exist on the east and west side of the pass.

Due to the large protected shoulders along this stretch of Highway 160, and because there is substantial local relief across Wolf Creek Pass, road cyclists ride up and over the pass. In addition, there are many dirt roads and trails that begin along this stretch of Highway 160. Depending on road or trail conditions and grade, mountain biking is also a recreational use on NFS lands. Mountain biking is not permitted in the Weminuche or South San Juan Wilderness areas. The Weminuche Wilderness can be accessed from either the CDNST or the Lake Fork Trail, both of which originate at or cross Highway 160. The South San Juan Wilderness can be accessed from the CDNST at Wolf Creek Pass but requires navigation of 25 miles of trail before arriving at the wilderness boundary.

One high-intensity but short duration recreational opportunity on both the SJNF and the RGNF is hunting. Archery season is from late August to the end of September. There is a muzzle loading season in mid-September and the rifle seasons from October to the end of November. Game that are typically hunted are elk and deer; although a limited number of permits are also issued for other big game species. The CDOW regulates all hunting on both the RGNF and SJNF. Due to the increase in use of many side roads on each of the forests during the hunting seasons, numerous dispersed camping locations have been established by hunting parties that have not been established in either of the forests.

Pagosa Springs, Colorado to Wolf Creek Pass

In Pagosa Springs, there are outdoor hot springs and a golf course that attract enthusiasts. Fishing on the west side of Wolf Creek Pass is mostly confined to streams that have reasonable public access. There are a few small lakes but they are not a major source of fishing opportunities. Highway 160 between Pagosa Springs and Wolf Creek Pass has several access roads that intersect it which allow reasonable vehicular access for fishing opportunities along the main stem of the San Juan River.

In the summer, many of the two-track trails that are not closed to motorized vehicles experience 4-wheel driving use. The nature and character of many of these 4-wheel drive roads is less appealing to individuals seeking dispersed primitive recreation opportunities that are more isolated or show little direct effects from motorized recreational usage. In the winter, many of these 4-wheel drive roads also receive traffic from snowmobiles.

Various other trails originate from roads that intersect Highway 160, providing dispersed recreation opportunities including a trail that travels up Turkey Creek from the Jackson Mountain Trailhead and throughout the surrounding area toward the Weminuche Wilderness, the Coal Creek Trail which travels approximately 4 miles up Fawn Gulch Road accessing the South

San Juan Wilderness, and other dispersed areas near Pagosa Springs, Colorado. On most trails that are well maintained and unrestricted, horseback riding is also a recreational use.

River boaters use reaches of the San Juan River below the confluence of the East and West Forks of the San Juan River and Pagosa Springs. There are no developed recreation resources along the San Juan River for boating specific operations. There are, however, a number of outfitters who guide stretches of the San Juan and other local rivers for both whitewater and fishing pursuits.

Farther east on Highway 160 at the confluence of the West Fork and the East Fork of the San Juan River is FSR 667 and East Fork Campground. East Fork Campground is a developed campground with 26 sites. This campground is commonly used by river boaters, fisherman, and as a gateway to the trails that begin along the East Fork of the San Juan River and continue into the South San Juan Wilderness. The South San Juan Wilderness is most readily accessible via the trail system to the southeast of FSR 667 or the 4-wheel drive road that continues up the East Fork drainage and offers a myriad of dispersed recreation opportunities both on NFS lands and within the South San Juan Wilderness.

Across Highway 160 from the Wolf Creek and West Fork campgrounds there is a parking lot and small interpretive trail up to Fall Creek that leads to a footbridge and a viewpoint of Treasure Falls. The interpretive trail is named the Treasure Falls Trail. In the summer, observers can stand on a foot bridge and be sprayed by the waterfall, while in the winter, ice climbers ascend the frozen waterfall.

The Windy Pass Trail begins just south of the Treasure Falls Trail and continues uphill onto SJNF lands across Windy Pass to Treasure Creek, past Treasure Mountain and on to the CDNST above the Ski Area. The Windy Pass Trail can be used as an alternative access to the CDNST or the South San Juan Wilderness via the CDNST.

Near the confluence of Wolf Creek and the West Fork of the San Juan River, two developed campgrounds exist. Both campgrounds are accessed from Highway 160 where it meets West Fork Road (FSR 648). Wolf Creek Campground has 26 sites, and West Fork Campground has 28 sites. Both of these campgrounds are situated close to the West Fork Trailhead which leads 4 miles past several small drainages to the West Fork Hot Springs, an undeveloped hot spring complex located at the edge of the West Fork of the San Juan River. The West Fork Hot Springs are located in the Weminuche Wilderness. Campfires are prohibited in the area directly surrounding West Fork Hot Springs, but are permitted in most other areas of the Weminuche Wilderness, unless fire restrictions are put in place. The SJNF has developed seven designated camping sites near the West Fork Hot Springs to minimize disturbance impacts to the site. All other dispersed camping sites around the West Fork Hot Springs have been closed. The West Fork Trail continues north deeper into the Weminuche Wilderness where access to additional dispersed recreation opportunities are possible.

All other developed and dispersed recreational resources and opportunities available from the Wolf Creek and West Fork Campgrounds to the summit of Wolf Creek Pass are discussed in detail in Chapter 3.

Wolf Creek Pass to South Fork, Colorado

All developed and dispersed recreational resources and opportunities available from the summit of Wolf Creek Pass to Tucker Ponds are discussed in detail in Chapter 3.

A few miles down Highway 160 to the northeast is an area of relatively flat, open terrain called Tucker Ponds. All of the lands within Tucker Ponds have an ROS setting of Modified Roaded. The area is accessed via Pass Creek Road (FSR 390). This area is characterized by Pass Creek flowing near two ponds that are fed by an unnamed tributary that flows into Pass Creek. At the Tucker Ponds site, there exists a developed campground called Tucker Ponds Campground (9,600 feet) with 16 sites, and a developed picnic area. Boating is not permitted at either of Tucker Ponds. Fishing is permitted from shore, and rainbow trout are readily stocked at each pond (USFS 2004b).

Fox Mountain, an area managed by the RGNF as a backcountry area, lies northeast of Tucker Park. Portions of the moderate elevation areas directly adjacent to the core backcountry area of Fox Mountain have an ROS setting of Semi-Primitive Motorized. However, much of the lower elevation areas surrounding Fox Mountain along key arterial forest roads are managed as a dispersed recreation corridor with an ROS setting of Modified Roaded. The higher elevations surrounding and including Fox Mountain have an ROS setting of Semi-Primitive Non-Motorized (Figure 3.8-1). The Fox Mountain backcountry area is managed to maintain plant and animal habitats that are shaped primarily through natural processes, and to provide backcountry experiences to the public in areas where there is little evidence of human activities. Motorized vehicles are not permitted in backcountry areas.

FSR 390 also provides access to dispersed recreation opportunities including hiking and camping, wildlife viewing, photography, bicycling, and 4-wheel driving in the Pass Creek drainage that includes the confluence of Pass Creek and Lost Mine Creek . From the confluence, multiple 4-wheel drive roads continue up both drainages as well as surrounding terrain. In the winter, FSR 390 is groomed for snowmobile users and cross-country skiers.

Directly adjacent to Highway 160 is a small lake called Pass Creek Lake. This lake has no developed recreation facilities. In summer, fishing occurs for rainbow trout. In winter Pass Creek Lake freezes over. Because the parking area is not plowed in the winter, Pass Creek Lake is not used for ice fishing. The Colorado Division of Wildlife stocks rainbow trout at Pass Creek Lake.

At the confluence of Pass Creek and the South Fork of the Rio Grande is FSR 410, which provides access to the upper drainage of the South Fork of the Rio Grande. In addition, a 113-acre body of water called Big Meadows Reservoir is accessed from FSR 410 (CSP 2004). The land directly surrounding Big Meadows Reservoir has an ROS setting of Modified Roaded. Within the Weminuche Wilderness, the ROS setting changes to Semi-Primitive along the South Fork of the Rio Grande, and Pristine on the slopes above the valley floor (Figure 3.8-1). Above Big Meadows reservoir, there is a developed recreation site called Big Meadows campground that has 56 camping units. Cascade Falls trail, a 0.25-mile foot trail, is located in this campground. In addition, there is a boat ramp and fishing pier on this reservoir. Power boating is permitted at no-wake speeds. Fishing opportunities exist for rainbow trout, brown trout, and

brook trout. Swimming, sailing, and other water sports are not permitted at Big Meadows Reservoir. The Archuleta Trail begins at Big Meadows Reservoir and provides access up the South Fork of the Rio Grande into the Weminuche Wilderness (USFS 2004b).

FSR 410 above Big Meadows Campground is gated and closed to motorized vehicles year round. The closed portion of FSR 410 climbs up the flanks and around Heart Mountain (10,828 feet) before terminating just before reaching Spruce Creek. The closed portion of FSR 410 provides dispersed recreation opportunities in the summer such as hiking, mountain biking, wildlife viewing, and photography. In the winter, the closed portion of FSR 410 provides dispersed recreation opportunities such as cross-country skiing and snowshoeing. The closed stretch of FSR 410 has an ROS setting of Modified Roaded (Figure 3.8-1).

A few miles north of Big Meadow Reservoir, off FSR 430, is another body of water called Shaw Lake (9,872 feet). Lands surrounding Shaw Lake have an ROS setting of Modified Roaded (Figure 3.8-1). No campgrounds exist at Shaw Lake but there are some developed recreation facilities such as toilets, a boat ramp, and parking facilities. Small motorized boats are permitted at no-wake speeds. Fishing is productive for rainbow, brook, cutthroat, and brown trout. The Colorado DOW stocks Shaw Lake with rainbow and cutthroat trout.

There are several trailheads off of FSR 430 that provide dispersed recreation opportunities. Trails in the area include Kitty Creek, Hope Creek, and Lake Fork Creek. FSR 430 also continues on and splits several times on its way to a complex trail system that surrounds Metroz Mountain (11,915 feet) and Hunters Lake.

The entire area that comprises Big Meadows Reservoir, Shaw Lake, and the trail system around Hunters Lake provides vast amounts of both developed and dispersed recreation opportunities. In the summer, everything from hunting and fishing, hiking, backpacking, camping, wildlife viewing, bicycling, rock-hounding, picnicking, and 4-wheel drive use on low standard roads characterize this recreational area. In the winter, there is fishing, skiing, or snowshoe; but the largest winter recreational use in this area is snowmobiling. In addition, ice climbing is also a dispersed recreational opportunity sought by winter recreational enthusiasts along Highway 160.

Approximately 1 to 2 miles down the South Fork of the Rio Grande valley at the mouth of Lake Fork Creek and Columbine Creek are two rest areas along Highway 160. Lake Fork rest area is a developed site that has a toilet, interpretive sign, and trailhead access to the Lake Fork Trail. The Columbine rest area is a developed site that provides picnicking facilities, a toilet, and photography opportunities of the numerous wildflowers that bloom in spring and summer. Both rest areas provide developed recreation opportunities for picnickers, wildlife viewers, and photographers. In addition, Lake Fork rest area provides dispersed recreation opportunities for hikers accessing the Lake Fork Trail. Lands surrounding these rest areas have an ROS setting of Modified Roaded (Figure 3.8-1).

Approximately 0.5-mile upstream of the confluence of the South Fork of the Rio Grande and Park Creek is Park Creek Campground (8,500 feet). Park Creek Campground has 16 developed sites. There is a Forest Road that continues up Park Creek to various low standard roads that provide dispersed recreation opportunities for bicycling, hiking, wildlife viewing, 4-wheel driving, and snowmobiling.

Just downstream, at the confluence of Beaver Creek and the South Fork of the Rio Grande, is a campground that provides developed recreation opportunities. Highway Spring Campground has 11 sites (USFS 2004b). Campground users are provided fishing opportunities on the South Fork of the Rio Grande.

Up Beaver Creek along County Road 20 there are two campgrounds that provide developed recreation opportunities, Lower Beaver Creek Campground with 19 sites, and Upper Beaver Creek Campground with 15 sites (USFS 2004b). In addition, there is a campground adjacent to Beaver Creek Reservoir named Cross Creek Campground, with 12 sites. Near the reservoir are two trails: Cross Creek Trail, which is open to ATVs, motorcycles, foot and horse users; and Big Tree Trail, which is only open to hikers.

Beaver Creek Reservoir (8,850 feet) is a 115-acre (46-ha) no-wake lake where motorized boating is permitted. Fishing opportunities exist for rainbow trout, brown trout, brook trout, and kokanee salmon. Developed recreation facilities include a parking area, toilets, and a boat ramp (CSP 2004).

Downstream of Highway Spring Campground, between Highway Spring Campground and South Fork, Colorado, are several privately owned and operated campgrounds and recreational vehicle (RV) parks. The names of the RV parks are Fun Valley, Moon Valley, Wolf Creek Ranch, and River Bend RV Park. Each of these RV parks is on privately owned land. These private RV parks offer developed recreation opportunities with all reasonable amenities for tent and motorized campers alike. No dispersed recreation opportunities other than fishing on the South Fork of the Rio Grande are available adjacent to these sites.

No other developed recreation opportunities are available between River Bend RV Park and the town of South Fork, Colorado.

Trout Creek, approximately 1 mile southwest of South Fork, Colorado, which joins the South Fork of the Rio Grande adjacent to Highway 160, offers undeveloped recreation opportunities including wildlife viewing, fishing, ATV use, hiking, and camping.

A.2.8.2 *Environmental Consequences*

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 capacity 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 that commute from either side of Wolf Creek Pass each day (up to 6,000 people) (Wolf Creek Ski Corporation 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 (Wolf Creek 2004). 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. The long-term negative effect of such an increase in winter on-mountain recreational users, compounded by recreational users who travel in from surrounding areas, could drive a Ski Area expansion whereby additional lifts and base area facilities would be required to provide adequate resources for Ski Area users.

The Ski Area is governed under the Ski Area Special Use Permit (SUP) and the associated *Wolf Creek Ski Corporation Master Development Plan* (MDP) (WCSC 1998) that was prepared to comply with the conditions in the SUP. The Ski Area is permitted as a winter use area while the 287.5-acre private property intended development would operate year-round. Termination of the Ski Area SUP as a winter sports resort will occur on June 30, 2037, at which time a new SUP may be granted to the Ski Area. Of particular note is a condition in the SUP that the permit is not exclusive, and the USFS reserves the right to use or permit others to use any part of the permitted area for any purpose, provided such use does not materially interfere with the rights and privileges specified in the permit. Within the 1998 MDP are numerous references to the Village, and the acknowledgement that the Ski Area's rate of growth could be accelerated by construction and operation of the Village. 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). 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 the Village residents, guests, and the commuting skiers alike.

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 the 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. If nordic ski trails in the area could not be successfully avoided or relocated, the Village would impact the dispersed winter recreational experience sought by nordic ski trail system users. In addition, 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 ROS setting of Modified Roaded or Primitive (wilderness).

The CDNST system would experience short- and long-term indirect negative 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 that will frequent the CDNST near the Village 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, short- and long-term negative 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 impact 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 Forest Service 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 Section A.2.11.

A.2.9 Traffic and Transportation

Impacts to traffic and transportation would result from developing the Village. 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, 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 Village development (which is assumed to occur over a 20-year period) may be better dealt with in the context of the larger, programmatic traffic and transportation assessments that will occur in the future.

A.2.10 Cultural Resources

All construction activities for the Village would be restricted to the 287.5-acre Village Region of Influence (ROI). 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 direct impacts to historic properties from construction of the Village. Indirect erosion impacts caused by construction activities to cultural resources outside the ROI would be prevented through erosion controls (best management practices) that would be in effect for all construction activities. Indirect impacts to cultural resources located 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.

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. Because visible developments already occur in the area from Highway 160 and the Ski Area, the remaining visual impact from the Village would be additive and not significant.

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

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 located outside the ROI from an increase in noise, off-road driving, and access into remote areas. Increased background noise could affect the setting of cultural resources, though this impact would likely be additive but not significant due to the presence of other developments in the area. Helicopter use to access the Village would result in noise intrusions to cultural resources outside the Village ROI; however, these intrusions would be intermittent, short term in duration, and not significant.

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 and 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 frequency and extent of such impacts is unknown. These types of impacts, when they occur, would be significant.

A.2.11 Social Environment

A.2.11.1 *Wolf Creek Village Development*

This section describes the socioeconomic impacts of the development of the Village, a non-Federal action separate from the Federal actions addressed in the main body of this EIS. The socioeconomic impacts are evaluated for the ROI encompassing Mineral, Archuleta, and Rio Grand Counties in the State of Colorado, as described in Section 3.11. The analysis in this appendix evaluates socioeconomic conditions for a non-Federal action under which full build-out of the Village would occur over an approximately 20-year period. Regardless of the decision(s) that result from the EIS for the Federal action, the Village may or may not be constructed.

A.2.11.2 *Methodology*

Economic Input-Output Analysis

Projections of economic impacts to the ROI from construction and operation of the Village have been developed using the Impact Analysis for Planning Model (IMPLAN). IMPLAN is an economic Input-Output Model, originally developed by the USFS for natural resource planning,

but later updated and adapted by many other Government agencies and private sector analysts for use in economic impact analysis. The IMPLAN system has been in use since 1979 and has evolved from a mainframe non-interactive application to a menu-driven microcomputer program that is completely interactive.

The IMPLAN model is a regional input-output model that is derived by using local data combined with national input-output accounts. The model uses the most currently available data obtained from the Department of Commerce, Bureau of Labor Statistics, and other Federal and state agencies. The model uses trade-flow characteristics to trace economic changes in a regional economy arising from changes in the level of activity in one or more identified sectors. The model uses county-level data to adjust the national income accounts to fit the trade-flow characteristics of the subnational ROI for the study. The analyst develops an ROI based on various factors, including residential distribution of the directly affected workforce, and trading and commuting patterns. ROIs are typically an aggregation of one or more counties, since the county is the smallest jurisdiction for which most economic data are collected. IMPLAN estimates economic changes for the defined ROI and quantifies changes to the following economic indicators:

- Sector Output
- Employment
- Personal Income
- Total Value Added
- Employee Compensation
- Proprietors Income
- Other Property Income
- Indirect Business Taxes

Changes in these indicators provide a detailed picture of how a change in a specific sector affects businesses, households, and the public sector in the whole region. In particular, changes in employment, income, and tax revenues give the strongest indication on how a project affects the regional economy. It is changes in these indicators that the document focuses on.

Major Assumptions Used in the Economic Impact Analysis

The predicted economic impacts from the development of the Village were derived using the methodologies described above. The analytical results of the modeling efforts, however, are affected by several factors including the quality of the data used and the types of assumptions made. Most of the model input data used in the economic analysis are based on preliminary project cost data, facility specification information (e.g., number of hotel rooms, types of accommodations, commercial space square footage) build-out schedules, and occupancy estimates provided by the Village proponents. Some of these data may be subject to change as

architectural designs evolve and better estimates are generated. Nonetheless, the analysis used the most detail data available as of early 2004.

The analysis also makes assumptions about employment requirements, in-migration rates, and demographics of in-migrating workers that would affect the magnitude of predicted impacts. Because Village employment data were not available at the time of the analyses, the projected employee population was estimated using data from other sources, including studies on employee density populations for various types of build-outs including commercial retail space and different types of lodging facilities. In addition, the analysis assumed that all employment generated would be full time. In reality, some proportion would likely be part-time or seasonal. The employment assumption was used to provide an estimate of the largest potential impact on the region's housing, school systems, and other services. This assumption, however, likely overstates to some degree total employment and income generated. Conversely, because the IMPLAN model does not have a demographic component to it, the model likely understates the tax revenue that would be generated by the project. For example, it does not take into account new housing that would likely be built to accommodate the increased population and which would generate additional property taxes. In sum, the model output provides a reasonable estimate of the magnitude of potential socioeconomic impacts, but likely overstates or understates changes in particular indicators.

A.2.11.3 *Construction Direct and Indirect Effects (Short Term)*

Construction Requirements and Impacts

The Village would be constructed over a 20-year period. If all the envisioned facilities were built, the total capital investment would approach $1 billion (in 2004 dollars). As described in earlier sections, the construction of the completed resort would encompass the following components:

- Infrastructure
- Amenities
- 120 single family homes
- 1,600 timeshare units
- 400 condominiums
- 6 hotels with a total of 1,100 rooms
- 4 bed and breakfasts (B&Bs)
- 141,700 square feet of multi-family units
- 1,200 square feet of commercial space

Each of these components would require significant capital and human resources to build and maintain over the lifetime of the project. As described in the ensuing sections many of these resources would need to come from outside the ROI and would generate large socioeconomic impacts on the surrounding area.

Construction Effects on Employment

Employment impacts of constructing the Village were estimated using the IMPLAN input-output model, regionalized for the 3-county ROI. Employment impacts for 5-year intervals, and for the peak construction year, are shown below in Table A.2.11-1.

Table A.2.11-1. Projected Employment Impacts from Construction

	Year 0[a]	Year 5	Year 6[v]	Year 10	Year 15	Year 20
Direct Employment	147	1,338	1,435	318	661	428
Indirect and Induced Employment	54	696	715	153	319	206
Total Employment	201	2,034	2,150	471	980	634

Source: IMPLAN model results.

[a] During "Year 0" construction activities include project preparation and infrastructure development. Construction of actual resort facilities begins in "Year 1"

[b] Year 6 is the period of peak construction employment.

The majority of the Village facilities (condominiums, hotels, timeshares, retail stores) are envisioned to be operational by Year 10 of the construction phase. Peak construction employment would occur in Year 6, with 1,435 direct jobs, which would represent almost a doubling of the construction jobs created in the ROI economy during 2000. As of 2000, 1,536 people in the ROI were employed in the construction industry, of which 986 were in Archuleta County (see Table 3.11-5 in Chapter 3). Only 99 construction jobs were generated in Mineral County.

Construction of the Village would generate an additional 715 indirect jobs during peak activity in Year 6. As seen in Table A.2.11-1, total employment (direct and indirect) generated by the construction of the Village would peak at 2,150 in Year 6 and gradually decrease to 634 by year 20. Employment would temporarily increase between Year 10 and Year 20, if a proposed 300-unit hotel were to be constructed.

Construction Effects on Income

Short- and long-term economic impacts would be expected. Construction of the Village would increase earnings in the ROI. Impacts of construction on ROI labor income were generated using the IMPLAN input-output model. Income impacts on the ROI from construction of the resort are shown below in Table A.2.11-2. Because construction employment would peak in Year 6, so would construction associated income impacts. 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 $27.2 million in the year 2000 (BEA 2004b). Total direct and indirect construction labor income earnings are projected to decrease to $14.7 million by Year 20.

Table A.2.11-2. Projected Income Impacts from Construction

	Year 0	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Direct Income	$3,577,298	$32,346,406	$34,652,992	$7,703,024	$16,058,129	$10,398,284
Indirect Income	$1,159,461	$14,781,734	$15,194,841	$3,251,311	$6,697,522	$4,336,915
Total Income	$4,736,758	$47,128,140	$49,847,831	$10,954,335	$22,755,651	$14,735,199

Source: IMPLAN model results.

[a] Year 6 is the period of peak construction employment.

Construction Effects on Population

Construction of the Village is estimated to require up to 1,435 direct workers during the peak year of construction. The types of jobs that would be created include construction managers, laborers, electricians, painters, heavy equipment operators, and brick masons, along with a variety of other trades. As described earlier, there were only 1,536 construction jobs generated in ROI during 2000, and the majority of those jobs were in Archuleta County.

To estimate the potential increase in population directly attributable to the construction of the Village, labor force data for the ROI were evaluated to assess the potential for employing local residents. For example, in the year 2003, the civilian labor force totaled 11,800, with 681 unemployed. The requirement for imported labor is illustrated by the fact that if all 681 unemployed workers would be able to fill a position in the construction industry and commute to the Village, there would still be a need for almost 800 additional workers at peak construction employment.

To better identify the potential construction labor pool for the Village, Census 2000 data for the surrounding region were compiled for 12 construction occupation categories, ranging from construction managers to construction laborers, and a variety of trades, such as brick masons, electricians, and painters. The Census data were aggregated for 9 counties including the ROI counties as well as Dorles, Gunnsion, Hinsdale, Ouray, San Juan, and San Miguel Counties[1]. For all 9 counties, only about 2,270 residents were identified with these construction related occupations. Hence, the available pool of workers from the surrounding area, well beyond commuting distance, would still likely fall far short of peak construction labor requirements. Finally, even if the number of available workers approached employment requirements, the mix of labor might not fully match the construction needs of the projects. For example, there might be more than enough construction managers, but too few electricians. In the absence of finalized and detailed project labor requirements and precise build-out schedules, it is difficult to project specific job category shortfalls, although it is clear that the available labor pool within commuting distance could not meet the employment requirements of a project of this magnitude.

For purposes of this analysis it is assumed that about 200 ROI resident workers would be available to fill direct construction jobs at the Village (about a third of the ROI unemployed labor

[1] In order to protect the confidentiality of Census 2000 respondents, EEO tabulations were not provided for counties of less than 50,000 population (or 100,000 in some instances) when the datasets in the Census 2000 Special EEO file contain very detailed information or a large number of cells.

force). Implicit in this assumption is that all unemployed construction workers in the ROI would accept jobs at the Village and that other unemployed workers not in the construction sector would also accept employment at the site. The analysis assumes that approximately 10 percent of all ROI construction workers residing in the ROI or about 170 unemployed construction workers would be available for employment[2]. Some, but not all, jobs in the construction sector would require specialized skills; therefore, it is reasonable to assume that some construction employment could be filled other unemployed workers in ROI. In addition, the strong employment stimulus could bring back into the labor force other residents who have for various reasons opted out of the region's labor market. Conservatively, it is assumed that another 30 ROI workers would be employed by the construction of the Village to bring the total available ROI construction workforce to 200. This total is somewhat speculative, but given the relatively small size of the ROI labor force, a reasonable estimate.

To simplify the analysis it is assumed that the 200 available workers match occupation needs perfectly in the first year of construction. That is, the analysis does not attempt to project specific employment shortfalls. It is also assumed that these workers would be within commuting distance of the construction site and would not need to relocate. It should be recognized that construction workers often have longer commutes than other occupations.

As seen in Table A.2.11-3, 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. By year 10 of the build-out, imported labor requirements would be significantly diminished, although a temporary increase in labor demand associated with construction of a hotel occurs between years 10 and 15.

Table A.2.11-3. Village Construction Generated Direct Labor Requirements Versus Labor Supply

	Year 1	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Direct Employment Requirements	1,088	1,338	1,435	318	661	428
Baseline Available Labor	200	200	200	200	200	200
Imported Labor	888	1,138	1,235	118	461	228

[a] Year 6 is the peak year of construction activity.

Because most construction work is short-term and the region's climate renders year-round work difficult (work slowdowns in the winter months and accelerated work schedules in the spring and summer periods), it is highly likely that that the majority of construction workers would not permanently relocate to the region. That is, most construction workers would likely seek out rental housing for the duration of their stay and few workers would likely bring family members with them. Accordingly, the population changes directly associated with construction activities would be viewed as temporary. For purposes of this analysis it is assumed that only 10 percent of the construction workers would bring family members.

[2] BLS statistics indicated that at the end of 2003, the national unemployment rate for construction workers was 9.3 percent (BLS 2004b). In general, the unemployment rate for construction workers is typically higher than that for the rest of the workforce.

In addition to direct employment, construction activity also generates indirect and induced employment. This is employment generated by increased business activities associated with the construction of the Village (business to business transactions) and consumer spending by the construction workforce. Table A.2.11-4 shows estimates of secondary employment generated by the construction activity. These jobs, unlike the construction jobs, would be less specialized and would be generated in a variety of sectors including, but not limited to, services, retail trade, and transportation.

Table A.2.11-4. Village Construction Generated Indirect and Induced Labor Requirements Versus Labor Supply

	Year 1	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Indirect and Induced Employment Requirements	481	696	715	153	319	206
Baseline Available Labor	250	250	250	250	250	250
Imported Labor	231	446	465	0	69	0

[a] Year 6 is the peak year of construction activity

The unemployment rate for the ROI in 2003 was 5.4 percent, indicating the available labor pool total to be approximately 700. Of this total, the analysis allocated 200 to direct construction activities, leaving a total of 500 unemployed workers potentially available to fill these jobs. It is unlikely that more than half of this group would or could fill the positions created indirectly by the construction activities. Accordingly, the economic impact analysis assumes that the local labor force could fill only about 250 of these indirect jobs. Because many of these jobs would be service jobs and requiring relatively low levels of skill, and be dependent on the level of construction activity, it is assumed that they would be filled primarily by transitory workers, of which only about 10 percent would be accompanied by family members.

Combining the results from Table A.2.11-5 and A.2.11-6 gives us the total (direct plus indirect and induced) in-migrating worker population, as shown in Table A.2.11-7.

Table A.2.11-5. Village Construction Population Impacts Estimated Number of In-Migrating Workers

	Year 1	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Direct Workers In-Migrating	888	1,138	1,235	118	461	228
Indirect Workers In-Migrating	231	446	465	0	69	0
Total In-Migrating Worker Population	1,119	1,584	1,700	118	530	228

[a] Year 6 is the peak year of construction activity.

To estimate the total population increase associated with construction of the Village, the analysis used the national family size of 3.14 to estimate the number of dependents that would accompany in-migrating married workers. Using the national average and the assumptions on proportion of in-migrating workers with families gives the following total population change estimate for construction related direct and indirect employment (Table A.2.11-6). At the peak

of construction activity, it is estimated that 2,064 people would move into the ROI because of construction related jobs.

Table A.2.11-6. Total In-Migrating Construction Population (Workers Plus Dependents)

	Year 1	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Total In-Migrating Workers	1,119	1,584	1,700	118	530	228
Single In-Migrating Workers (90 percent)	1,007	1,426	1,530	106	477	205
In-Migrating Workers with Families (10 percent)	112	158	170	12	53	23
Family Members	240	339	364	25	113	49
Total In-Migrating population (workers plus dependents)	1,359	1,923	2,064	143	643	277

[a] Year 6 is the peak year of construction activity.

Construction Effects on Housing

Short- and long-term effects would be expected. Based on the in-migrating worker population calculations above, 1,119 construction workers would be in need of housing in year 1, increasing to 1,700 in year 6 (the peak year) (see Table A.2.11-6). The number of immigrant construction workers would be expected to remain above 1,000 until year 10. The ROI housing stock had 4,276 vacant units (Table 3.11-10), however, 2,889 units were for seasonal or recreational use only, leaving just 1,387 units available for sale or rent. At peak construction up to 1,700 housing units would be required to accommodate in-migrating workers and their families. Hence, the demand for housing from construction workers alone would exceed the ROI supply through the first 9 years of the construction phase. As discussed previously, because most construction work is short-term and somewhat seasonal (i.e., the region's climate renders year-round work difficult), it is assumed that the majority of construction workers would not permanently relocate to the region, and that most of the workers would be single, or would not bring their families with them (Table A.2.11-8). Therefore, most of the in-migrating construction workers would be expected to seek rental housing for the duration of their stay. In the short-term, pressure would be greatest on multifamily rental housing, since construction workers tend to use more transient, mobile, and multifamily housing. Some portion of the single workers would likely share housing due to the limited housing supply, and to save on housing costs.

As of the year 2000, Mineral County had only 70 housing units available for sale or rent. Therefore, it is expected that the vast majority of the in-migrating workers would live in Archuleta or Rio Grande Counties. It is likely that workers would seek housing in established communities such as Pagosa Springs in Archuleta County and Del Norte, Monte Vista, and South Fork in Rio Grande County. If suitable housing (i.e., housing that fits the construction workers income, size [number of bedrooms], and location relative to the Village), were not available within the ROI, the worker would need to look outside the region, increasing their commuting time to the worksite.

Table A.2.11-7. Housing Needs of In-Migrating Construction Population

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Maximum housing units needed supply in migrating construction worker population	1,119	1,584	1,700	118	530	228
Housing units available if no new construction	1,387	1,387	1,387	1,387	1,387	1,387
Potential shortage of units	0	197	313	0	0	0

Construction Effects on Schools

The total population in-migrating to the ROI for construction jobs would be expected to increase relatively quickly to its peak level of 2,064 people by Year 6, although most of these immigrants would be single construction workers. Only about a 170 workers are projected to be accompanied by family members (spouses and dependents). Using demographic data from the 2000 Census for the United States, it is estimated that the in-migrating families would include 148 school-age children (children aged between 5 and 19 years old) by the end of Year 6. Using age distribution tables from the same Census, it is estimated that the 148 students would be fairly evenly distributed among elementary schools, middle schools, and high schools (not including the alternative schools). Hence, about 50 students would be added to the elementary schools, 50 students added to the middle schools, and high school enrollment would increase by 48 students. As mentioned earlier, it is assumed that the majority of the new residents would reside in Archuleta and Rio Grande Counties because of the availability of housing and services. Mineral County does not have the available housing stock to accommodate the incoming families. In addition, the county would be the most severely affected by an increase in student population because its schools are already operating beyond capacity. If all 148 students were to enroll in Mineral County's school district, student population would almost double. Archuleta County has one school district with a total student population of about 1,500. The schools are operating at or within capacity. To assess the maximum impact to the Archuleta's school district, if all 148 students moved into Archuleta County, the increase in the district's student enrollment would approach 10 percent. Rio Grande County has 3 school districts with a total of student population of about 2,500. Rio Grande's schools are operating at or below capacity, and two of the school districts have seen recent declines in enrollment. If all 148 students were to move to Rio Grande County, the increase in student population would be almost 5 percent. However, it is unlikely that all incoming families would move into one county. It is probable that in-migrating families would reside throughout the ROI, though a higher proportion would be expected to reside in Archuleta County or Rio Grande County because of the availability of housing and services. Therefore, depending on where the in-migrating workers locate, specific schools could face capacity issues. Additional teachers and staff would need to be added to maintain current teacher-student ratios, and temporary or permanent additional classroom space would need to be constructed. The construction impact would pose particular challenges, because of the fluctuations in the worker and student population would render permanent changes in the educational infrastructure impractical.

A.2.11.4 *Operations Direct and Indirect Effects*

Operations Effects on Employment

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.

Estimates of direct employment were developed separately for each type of facility planned for the Village. Specifically, employment assumptions were based on various studies and surveys that estimated the number of employees per room for various accommodation types (hotels, B&Bs, timeshares), and average number of employees per square footage of commercial space (restaurants and retail stores) (*City of Boulder Planning Department, 2002, University of Vermont Lodging Industry Study, 2000, and Riverside County General Plan, 2003).* The employment ratios were then applied to the total number of planned rooms for each lodging type and square footage by retail operation type, respectively. Total operation employment generated at 5-year intervals was estimated using the IMPLAN model is shown in Table A.2.11-8.

Table A.2.11-8. Projected Employment Impacts from Operations

	Year 0	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Direct Employment	0	843	937	1,509	1,539	1,582
Indirect and Induced Employment	0	242	276	417	422	428
Total Employment	0	1,085	1,213	1,926	1,961	2,010

Source: IMPLAN model results.

[a] Year 6 is the period of peak construction employment

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 (Table A.2.11-8).

The magnitude of the employment stimulus from the Village is seen when compared to 5,500 total retail and service jobs that were generated in the entire ROI during the year 2000. Furthermore, the majority of the retail and services sector jobs are in Archuleta and Rio Grande Counties, with only 7 percent (420 jobs) in Mineral County (see Table 3.11-5). Therefore, operation of the Village would result in a significant increase in the number of retail and service sector jobs in Mineral County. In fact, the total number of jobs generated by the Village would be more than double the 2000 population of Mineral County.

It should be noted that although it is likely that some operational jobs would be seasonal and part time, both direct and indirect employment were assumed to be full-time employees by the economic model. In reality, there would likely be some intra-year fluctuations of employment

levels, with summer and winter months providing peak employment and spring and fall season generating fewer jobs. The degree to which such fluctuations would occur would depend on the ability of the resort to attract visitors throughout the year. Nonetheless, employment impact estimates generated by the model may tend to overstate the actual future jobs employment associated with the Village operations.

Operation Effects on Income

Short- and long-term economic effects would be expected. Operation of the Village would increase earnings in the ROI. The first resort facilities, including two hotels, would commence operations in Year 2 of the construction phase. As noted earlier, many, if not most, of the resort operations jobs would be in the services and retail industry sectors. Income impacts from operations for about every fifth year during the development period are shown below in Table A.2.11-9. The impacts were generated using IMPLAN. 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 a 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.

Table A.2.11-9. Projected Income Impacts from Operations

	Year 0	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Direct Income	$0	$16,572,688	$18,192,069	$29,306,572	$29,670,355	$30,191,778
Indirect Income	$0	$5,126,924	$5,866,518	$8,867,112	$8,964,895	$9,105,051
Total Income	$0	$21,699,613	$24,058,587	$38,173,683	$38,635,248	$39,296,831

Source: IMPLAN model results.

[a] Year 6 is the period of peak construction employment.

Operation Effects on Population

Operation of the Village is estimated to require 1,582 direct workers upon completion (Table A.2.11-10). In addition, 428 indirect jobs would be generated at full operation. The types of jobs that would be created include those in the services and retail industries, such as hotel managers, hotel clerks, maids, waiters and waitresses, and retail store managers and clerks.

The operations phase of the project would face the same labor supply constraints as the construction phase, with the available labor supply insufficient to meet the projected labor demand. Some of the available labor force that could take operations jobs might accept construction jobs, reducing the already limited labor supply. However, the operations phase does not peak until Year 20, with the number of operations jobs increasing annually during the 20-year build-out, providing time for the workforce to grow with the project. Families of in-migrating construction workers might provide additional labor for operations of the Village.

Applying the same methodology used to estimate construction activity population impacts, which assumed 700 unemployed in the ROI, 450 of whom would work in construction or in construction generated jobs (200 direct and 250 indirect), would leave a labor force of 250 available for operations. It was assumed that 150 of these workers would be directly employed in operations, and the remaining 100 would fill indirect operations jobs. It is assumed that all 250

of these unemployed people would accept the jobs, would have the appropriate skills and education to fill the available direct and indirect jobs created, and would be able to commute to the Village.

Although the analysis would appear to assume that the Village would use all of the available labor force, resulting in 0 percent unemployment, these numbers are based on current population and labor force levels. Because the region would experience natural population growth during the 20 year build out period independent of the project, the actual civilian labor force and thus the pool of workers available for project employment would be larger than that implied by the analysis. In addition, family members of in-migrating operation workers would also increase the available labor pool. Hence, based on these two factors, the actual in-migrating population could be less than projected.

As seen in Table A.2.11-11 and A.2.11-12, at peak operations activity in Year 20, 1,432 workers would need to in-migrate to the ROI in order to fill direct labor needs created by operation of the Village, and another 328 to satisfy indirect labor demand, for a total in-migrating population of 1,760 (Table A.2.11-13).

Table A.2.11-10. Village Operations Generated Direct Labor Requirements Versus Labor Supply

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Direct Employment Requirements	112	843	937	1,509	1,539	1,582
Baseline Available Labor	150	150	150	150	150	150
Imported Labor	0	693	787	1,359	1,389	1,432

Table A.2.11-11. Village Operations Generated Indirect and Induced Labor Requirements Versus Labor Supply

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Indirect and Induced Employment Requirements	28	242	276	417	422	428
Baseline Available Labor	100	100	100	100	100	100
In-Migrating workers	0	142	176	317	322	328

Table A.2.11-12. Village Operations Population Impacts Estimated Number of In-Migrating Workers

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Direct Workers In-Migrating	0	693	787	1,359	1,389	1,432
Indirect Workers In-Migrating	0	142	176	317	322	328
Total In-Migrating Workers	0	835	963	1,676	1,711	1,760

As discussed earlier, the economic impact analysis conservatively assumes that the jobs associated with operating the Village would be full-time positions. In actuality, some percentage of these jobs would be seasonal and many other jobs would be characterized by high turnover rates. Therefore, the proportion of in-migrating workers accompanied by families would likely be relatively low. For the purpose of this analysis, it is assumed that 10 percent of the operation direct and indirect workers would be accompanied by family members. The analysis again used the national family size of 3.14 to determine the total in-migrating family population due to operations jobs generated by the Village. Using these assumptions, the total estimated increase in population generated by operations is listed in Table A.2.11-13. At the peak of operations activity in Year 20, it is estimated that 2,137 people would move into the ROI because of operations related jobs.

Table A.2.11-13. Total In-Migrating Operations Population (Workers Plus Dependents)

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Total In-Migrating Workers	0	835	963	1,676	1,711	1,760
Single In-Migrating Workers (90 percent)	0	752	867	1,508	1,540	1,584
In-Migrating Workers with Families (10 percent)	0	83	96	168	171	176
Family Members[a]	0	179	206	359	366	377
Total In-Migrating population (workers plus dependents)	0	1,013	1,170	2,034	2,077	2,137

[a] The number of family members is based on the national average family size of 3.14. Therefore, every worker with a family would in-migrate with an additional 2.14 people.

Operation Effects on Housing

Short- and long-term effects would be expected. Based on the in-migrating worker population calculations above, 835 operations direct and indirect workers would be in need of housing by year 5, increasing to 1,760 by year 20 (the peak year) (Table A.2.11-14). Because many of the operations jobs would be minimum wage, seasonal positions (e.g. wait staff, housekeeping staff, retail clerks), only a small proportion of these workers are expected to permanently relocate and bring families with them. The majority of the operations employees would be expected to be primarily single workers seeking rental housing, and would possibly share housing due to the limited housing supply and also to save on housing costs.

As described above, the ROI housing stock had 1,387 units available for sale or rent in the year 2000. Hence, the demand for housing by operations workers alone would not exceed the ROI supply until year 10. However, the housing demand generated by the construction workers alone during the first 9 years of development would exceed the available ROI housing supply. The incoming operation workers would further strain the housing market. Until the more housing units would be constructed in the ROI in response to the increased demand, workers would have to find housing outside of the ROI.

Table A.2.11-14. Housing Needs of In-Migrating Operations Population

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Maximum Housing Units Needed to Supply In-Migrating Operations Worker Population	0	835	963	1,676	1,711	1,760
Housing Units Available if no new construction	1,387	1,387	1,387	1,387	1,387	1,387
Potential shortage of units (Operation demand only)	0	0	0	289	324	373

Operation Effects on Schools

The population in-migrating to the ROI for operations jobs would increase to 1,170 people by Year 6, and then would continue to increase gradually until the peak in Year 20 with a total of 2,137 people in-migrating. Most of these immigrants are also expected to be single workers with no family dependents. Using demographic data from the 2000 Census for the United States, it is estimated that the in-migrating families would include 153 school-age children by Year 20. Using age distribution tables from the same Census, it is estimated that the students would be fairly evenly distributed among elementary schools, middle schools, and high schools (not including the alternative schools). Hence, 52 students would be added to the elementary schools, 51 students added to the middle schools, and high school enrollment would also increase by 50 students. This impact of the population change by full build-out would be equivalent to peak construction impacts. Additional teachers and staff would need to be added to maintain current teacher-student ratios, and temporary or permanent additional classroom space, or possibly new schools, would need to be constructed.

A.2.11.5 *Combined Construction and Operation Effects*

Construction and Operations Effects on Employment

Total employment generated by construction and operation of the Village is presented in Table A.2.11-15. Employment impacts for approximately 5-year intervals and for years in which construction and operation employment peak. For example, peak total employment is reached in Year 9, although construction employment peaks in Year 6 and operation employment peaks after year 20.

Table A.2.11-15. Projected Employment Impacts from Construction and Operation of the Village

	Year 0	Year 5	Year 6[a]	Year 9[b]	Year 15	Year 20	Year 21
Direct Employment	147	2,181	2,372	2,742	2,200	2,010	1,582
Indirect and Induced Employment	54	938	991	1,019	740	635	428
Total Employment	201	3,119	3,363	3,761	2,940	2,645	2,010

Source: IMPLAN model results.

[a] Year 6 is the year of peak construction employment

[b] Year 9 is when total employment (construction and operation) peaks

Because the ROI, and especially Mineral County, is a rural, sparsely populated area with a small labor pool, the employment generated by the construction and operation of the Village would represent a significant increase above baseline levels. Peak employment levels of 3,761 jobs would represent almost a 30 percent increase over the total number of ROI jobs generated during 2000. It would also represent a five-fold increase in jobs in Mineral County. With a total ROI civilian labor force below 12,000, a large proportion of these jobs would have to be filled by immigrating workers.

Finally, it should be noted that the total employment gains generated by the operation of the Village could be somewhat offset by potential job losses at competing businesses in the surrounding area. For example, because of the paucity of accommodations in Mineral County, Pagosa Springs in Archuleta County currently services most of the visitors to the Wolf Creek area, especially during the winter skiing season. With the availability of lodging, food, and shopping services at the Village, some of those establishments would likely experience a decrease in visitor volume, and could potentially either downsize or terminate business completely. Displaced employees from some of these adversely affected establishments might find work at the Village, avoiding unemployment, but would reduce the projected net gain in jobs generated by the Village. The extent to which the Village would serve as a substitute for lodging and food services in Pagosa Springs is difficult to project, especially for those facilities in Pagosa Springs that target different clientele, such as budget travelers. In sum, the net regional economic impact from operation of the Village is likely to be a substantial gain in ROI employment; nonetheless, the analysis acknowledges, but does not quantify the potential for some businesses, especially those in Pagosa Springs to be adversely affected.

Construction and Operation Effects on Income

Short- and long-term economic impacts would be expected. Construction and operation of the Village would increase the ROI's labor earnings. Total earnings (direct and indirect from construction and operations) are expected to peak in Year 9 at $81.1 million (Table A.2.11-16). This represents about a one-third increase in the ROI total nonfarm industry earnings of $256.7 million in the year 2000 (BEA 2004b). After full build-out is complete in Year 20, total annual direct and indirect labor income earnings from the Village are expected to reach $39.3 million per year.

Table A.2.11-16. Projected Total Earnings Impacts from Construction and Operations of the Village

	Year 0	Year 5	Year 6[a]	Year 9	Year 15	Year 20	Year 21[b]
Direct Income	$3,577,298	$48,919,094	$52,845,061	$59,373,648	$45,728,484	$40,590,062	$30,191,778
Indirect Income	$1,159,461	$19,908,658	$21,061,359	$21,696,037	$15,662,417	$13,441,966	$9,105,051
Total Income	$4,736,758	$68,827,753	$73,906,418	$81,069,684	$61,390,899	$54,032,030	$39,296,831

Source: IMPLAN model results.

[a] Year 6 is the period of peak construction employment

[b] Year 21 income is derived from operation activities only; construction is completed in Year 20.

Construction and Operation Effects on Population

The Village would require a construction and operations workforce that exceeds the available labor force in either Mineral County or in the ROI as a whole. In addition, because these economic activities would generate several hundred additional indirect and induced jobs, further population growth would be associated with the resort development. The magnitude of population impacts would depend on the ability of the resort to hire workers from within the ROI and the proportion of in-migrating workers that would be accompanied by family members. The extent to which construction workers might remain in the ROI as operations workers in-migrate could also influence the size of the population expansion.

Because the build-out of the Village is planned to continue for a 20-year period, total population impacts would result from the aggregate impact of construction and operations labor in-migration requirements, because both phases would overlap throughout the entire evaluation period. In fact, the population could fluctuate as construction activities decrease and operations increase. Upon completion, the project's long-term impacts would emanate from operations only.

Estimated total population generated by construction and operation of the Village is presented in Table A.2.11-17. Peak population impact would occur after the 20-year construction period is complete and the Village is fully operational. At that point, it is estimated that 2,414 people would move into the ROI because of the Village. At peak construction in Year 6, the total population increase would reach 3,232. In total, this equates to about a 13 percent increase over the 2002 ROI population of 24,145. If all migrants were to move into Mineral County, the population would increase by four-fold. However, without the housing and infrastructure to support such high growth, the most likely scenario is that the vast majority of the in-migrating workers would move into communities in Archuleta or Rio Grande County first, and could eventually move into Mineral County as development occurs.

Table A.2.11-17. Estimated Total Population Impacts from Construction and Operation of the Village

	Year 1	Year 5	Year 6[a]	Year 10	Year 15	Year 20
Population Impact from Construction	1,359	1,924	2,063	143	643	277
Population Impact from Operations	0	1,014	1,169	2,035	2,077	2,137
Total In-Migrating population	1,359	2,938	3,232	2,178	2,720	2,414

Construction and Operations Effects on Housing

Short- and long-term effects would be expected. Based on the in-migrating worker population calculations, 1,119 workers would be in need of housing by year 1, increasing to 2,663 by year 6 (the peak construction year), then leveling out to around 1,988 by the time construction is finished and the Village is fully operational at the end of Year 20 (Table A.2.11-18). As previously discussed, only 1,387 housing units are available for sale or rent in the ROI. The demand for housing would significantly exceed the available housing supply throughout the build-out period. Maximum shortfall in supply would exceed 1,200 units, although as discussed earlier, because many of the construction workers and operational workers would only

temporarily relocate to the area, a relatively high proportion would share housing units to save costs. Nonetheless, the current availability of housing in the ROI would imply that there would be at least a short-term physical shortage of housing units.

In addition, the large and rapid increase in housing demand from the project-induced population would most likely increase the overall housing rental rates for the ROI in the short- and long-term. The sales price and rental increases could have a disproportionately negative impact on low- and moderate-income households, especially those who currently do not own housing. Prices could decrease over time, as housing supply would be added to fulfill the additional long-term demand. In the longer-term, some housing used by construction workers would be occupied by operations workers. It is possible that some of the construction workers would be retained for the operational phase or find alternative employment within the ROI. The housing market would be expected to remain tight during the 20-year development phase, with high demand but short supply.

Table A.2.11-18. Housing Needs of In-Migrating Construction and Operations Population

	Year 1	Year 5	Year 6	Year 10	Year 15	Year 20
Maximum Housing Units Needed to Supply In-Migrating Construction and Operation Worker Population	1,119	2,419	2,663	1,794	2,240	1,988
Housing Units Available if no new construction	1,387	1,387	1,387	1,387	1,387	1,387
Potential shortage of units	0	1,032	1,276	407	853	601

Construction and Operation Effects on Schools

By Year 6, the projected increase in student population from in-migrating construction and operations workers with families is 239 new school-age children. By Year 20, the projected total increase would be 174 additional school age children. Mineral County schools are already operating beyond capacity and have no classroom space for additional students. Rio Grande County schools have some capacity for additional students, and possibly some Archuleta County schools. However, with such a large number of new students, even schools with some space for new students would still need to hire additional teachers and staff, and most likely find additional classroom space, whether that space be temporary or permanent. Because the establishment of the Village would result in a permanent increase in the ROI population, it follows that more permanent solutions would be required, such as expanding existing schools or constructing new schools. Construction of new schools would require appropriate funding, but in recent years the school's budgets have been reduced. Some funding would be gained from the taxes generated by Village and the new residents, but finding enough financial assistance to make the necessary changes to accommodate the new students could prove challenging. Finally, it should be noted that the Village Plan includes the conveyance of a 3-acre lot area within the Village to the Mineral County School District for the purpose of constructing a school and educational facilities. The financial terms of constructing and operating the school would be negotiated between the Applicant and the Creede Consolidated School District.

Construction and Operation Effects on Public Services (Police, Fire, EMS, Healthcare)

The projected increase in population resulting from the Village would have immediate, short-term adverse impacts from the initial heavy influx of construction workers between Years 1 and 6, but long-term adverse effects would be expected as well because of the continued construction that would occur through Year 20, and because of the in-migration of workers needed to operate the Village. Currently, the ROI has a ratio of about one law enforcement employee per 286 people, and about one fire protection employee (or volunteer) per 135 people. To maintain these ratios in Year 6, an additional 11 police officers would need to be hired, and 24 more fire protection personnel. By Year 20, 8 more police officers and 18 more firemen would be required.

However, it must also be considered whether the current ratios of public safety personnel to population, and availability of healthcare facilities, are sufficient. With increased population comes increased risk for accidents and emergencies. In addition to the Village employees, homeowners and guests staying at the newly constructed village housing (i.e., single-family homes, hotels, condominiums, B&Bs, and timeshares) would also increase the number of people in the ROI requiring public safety and healthcare services. Some of the current health care facilities servicing Mineral County are limited, or are located 40 or more miles away. Mineral County has no hospital. The closest hospital is about 65 miles away in Rio Grande County. EMS services to the Ski Area are dispatched out of Pagosa Springs in Archuleta County, which is about 40 miles away.

The increase in population from the construction and operation of the Village would undoubtedly increase demand for public safety and healthcare services. Additional public safety personnel would need to be hired, and possibly new facilities (e.g., fire station, police station, healthcare clinics, or hospitals) would need to be constructed in closer proximity to the Village. Tax revenues from the operation of the resort, as well as induced economic activity generated by the construction and operation of the resort would need to be directed toward expanding these services as required.

Construction and Operation Effects on Tax Revenues

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 like 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 a indirect impact construction and operation of the resort. The IMPLAN model estimates annual tax revenues generated by construction and operation of the Village for the ROI. The model did not calculate future taxes generated from construction of and occupancy of new housing that would also be built, including some 98 residences associated with the resort itself. Hence, projected tax revenues should be viewed as very conservative. Table A.2.11-19 provides estimated annual tax revenues for 5-year intervals, generated by construction and operation of the Village. It should be noted that estimated tax revenues include payroll taxes that are transferred to the Federal Government and do not affect local government revenues. This is particularly relevant during the construction phase where the majority of taxes are payroll taxes and a relatively small

proportion of the total revenue is from sales taxes and other fees that accrue to the state and local governments.

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. It must be emphasized that the IMPLAN model is a static model and does not take into account the demographic changes that would result from implementation of the construction and operation of the Village. Hence, these estimates significantly understate the likely generation of tax revenues accruing to county and local governments within the ROI.

Table A.2.11-19. Projected Total Tax Impacts from Construction and Operations

	Year 0	Year 5	Year 6[1]	Year10	Year 15	Year 20	Year 21[2]
Construction Tax Revenue	$1,206,029	$12,901,727	$13,500,710	$2,926,927	$6,024,156	$3,900,883	0
Operations Tax Revenue	0	$8,577,413	$9,491,665	$15,151,633	$15,274918	$15,451,627	$15,451,627
Total Tax Revenue	$1,206,029	$21,479,145 .00	$22,992,436 .00	$18,078,560 .00	$21,299,089 .00	$19,352,530 .00	$15,451,839 .00

Source: IMPLAN model results.

[a] Year 6 is the period of peak construction employment

[b] Year 21 tax receipts are derived from operation activities only; construction is completed in Year 20.

A.2.11.6 *Construction and Operation Effects on Protection of Children*

Construction activities are expected to last for the 20-year development period. Although no children are currently residing at the Ski Area, they are present as recreational users of the ski slopes, and, as development continues, would be guests staying at the Village resort. Because construction sites can be enticing to children, construction activity and associated construction traffic could be an increased safety risk. During construction, applicable Federal, state, and local safety measures would need to be followed to protect the health and safety of children near the construction site. It is recommended that barriers and "no trespassing" signs be placed around construction sites to deter children from playing in these areas and that construction vehicles and equipment be secured when not in use.

A.2.11.7 *Construction and Operation Effects Summary*

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 through out a 20-year build-out period, some the employment associated with the construction phase could be longer-term than typical construction jobs.

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.

A.2.12 Environmental Justice

A.2.12.1 *Wolf Creek Village Development*

This section describes the environmental justice impacts of the development of the Village. The environmental justice impacts are evaluated for the ROI encompassing Mineral, Archuleta, and Rio Grand Counties in the State of Colorado, as described in Section 3.11.

A.2.12.2 *Environmental Justice Impacts from Construction and Operation of the Village*

Short- and long-term adverse effects would be expected. The construction and operation of the Village could impact 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. Potential price increases would render renting less affordable and make homeownership unattainable for most low-income households.

A.2.13 Infrastructure and Utilities

A.2.13.1 *Existing Infrastructure*

Existing infrastructure and utilities within the private property holdings include FSR 391 and water intake structures. Water intake structures have already been installed by the Village property owners in Pass Creek on the Village property to provide collection points for the raw water needed for future development of the property.

FSR 391 is a gravel road that currently serves as the connecting road from Highway 160 to Alberta Lake (also known as Alberta Reservoir Road). FSR 391 is a NFS Level 3 Road with a Traffic Service Level 3. The road is available for private use by the Village land users and for use by the public (vehicular and non-vehicular). The roads use is limited to periods of dry weather by vehicles that do not exceed eight feet in width and or 80,000 lbs gross vehicle weight (gvw). Access is further limited to the period of June to September (or the first snowfall of the season). No vehicle traffic is permitted during the closure period (Malecek 2004b).

There is no other infrastructure on the Village property that could support development at this time (USFS 1999a). As currently planned, construction would be conducted in four phases with the complete build-out on the property estimated over a 20-year period (Murfee 2004). Figure A.13-1 shows a preliminary layout of the infrastructure and utilities on Village property (Village 1999). The location of the proposed parking garage and onsite power plant was not available. For each of the alternatives, the development on the Village property could include the following infrastructure and utilities (Ferguson 2003):

Water

- Raw water tanks (drinking water and fire protection) - Four 3-million gallon (11 million L) tanks and one 0.5-million gallon (1.9 million L) tank would be constructed to provide water for the development. The tanks would be built as the phases of the development are constructed.

- Water distribution system - The distribution system for potable water and fire protection would be constructed to serve the entire private land holdings. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Stormwater collection system - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Fire Protection System (fire water only) - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Snow Management Areas (seasonal) - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- 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 land holding with associated piping and pumping infrastructure; raw water storage reservoirs and water tanks for storage. Based on observed wastewater flows and use in the Wolf Creek geographical region, 2,172 connections would result in an estimated wastewater flow at full build-out of 532,140 gpd (Murfee, 2004). The requested permit is for a discharge capacity of 600,000

gpd, with Phase 1 capacity of 50,000 gpd and Phase 2 capacity of 100,000 gpd. Wastewater treatment facility (0.6 MGD) and waste water discharge structure(s).

- Sewer Collection System - Sanitary sewer collection and handling lift stations in four locations, two temporary lift stations and two permanent stations (North Diversion and South Diversion areas).

- Solid waste management - Solid waste management would be privately contracted during the initial phase of construction and would move to a solid waste transfer facility with compaction capabilities as the parcel becomes fully built out. Solid waste transfer facility sludge from the wastewater treatment plant would have to remain separated from the solid waste stream. Sludge would be handled by a private contractor. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

Power

- Base Power Generation - An onsite power plant would be used to provide heating and electricity generation to the private land holding. The Phase 1 build-out of the development would require one 2 MW generator unit. The preferred unit type would be a Caterpillar 3561B, non-road, carburetor emissions certified 2,000 natural gas fired generator. The generator unit has Silex Sound attenuated enclosure rated to 75 decibels A level (dba) at 5 feet; 4,200 gallons diesel double wall UL listed 142 tank; house power panel; space heaters; ventilating fan; Pneumerctor TMS fuel tank monitoring system; EMCPII+ control panel, 300 amp, 4,160 volt main breaker. The unit would be self-contained. The dimensions of the unit are 586 inches long by 144 inches wide by 162 inches tall and its weight is approximately 110,000 pounds without fuel. The unit is top exhausted with Super critical grade hockey puck style silencer installed internal insulation. The natural gas would be supplied by LNG that would be delivered by truck to the private land holding once every 2 weeks from a supplier in Cortez, Colorado, for Phase 1. The Phase 1 build-out is estimated to require 750 kW of generation capacity. This leaves 1,250 kW capacity spare which can be sold, or the generator can operate at 40 percent capacity with less emissions and fuel consumption. The other 1,250 kW of capacity would then be used to provide power to a portion of Phase 2. This unit would also provide power for construction on the property. At full build out (estimated at 20 years), it is anticipated that 10 2-MW units (total of 20 MW) would be required to fully power the entire development, if an outside power source is not available or desirable (Trembath 2004).

- Emergency Power Generation - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Electrical Distribution System - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

Communications

- Fiber optics, phone and or cable - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Roads - Approximately 3 miles of all weather secondary roads with approximately 0.5 mile of road greater than 8 percent slope grade. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities. The roads would be constructed to Mineral County PUD standards that include a 24-foot minimum width.

- Bridging for roads and pedestrians - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities. These bridges cross delineated wetlands and drainages within private land holdings.

- Shuttle System - The shuttle system would be used for inter-property transportation to justify parking variances or to eliminate congestion. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Parking - Parking space for approximately for approximately 4,542 vehicles; 4,206 covered spaces and 336 open spaces. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Street lighting and signage - Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Mixed use/commercial, single family, multi family and employee housing - Buildings for residential and commercial development (2,172 units). Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities. Blasting and cut/fill of areas within the 287.5-acre property on steep slopes (particularly in the southern portion of the 287.5-acre property near the area known as "the Waterfall" in the Wolf Creek Ski Area – Blocks 13, 14 and 15 in Parcel C). These areas would need to be leveled for building sites.

- Police Substation - Accommodations would be made in a common area property by the property owners association to house a county law enforcement representative at full build-out. Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

- Vehicle Parking Garage - A covered garage that would accommodate 4,542 standard vehicles. Specifications and other detailed engineering and environmental specifics

would be developed and submitted through the appropriate permit process for these activities.

- School - The Applicant has proposed a 3-acre lot area within the eastern portion of the parcel to be conveyed to the Mineral County School District, at the time of final platting, for the sole purpose of a school and educational facilities. This would be triggered by the Village at Wolf Creek population generating a minimum of 40 students registered in the Creede Consolidated School District. Financial terms of constructing and operating the school would be negotiated between the Applicant and the Creede Consolidated School District (Honts 2000). Specifications and other detailed engineering and environmental specifics would be developed and submitted through the appropriate permit process for these activities.

A.2.13.2 *Construction Direct and Indirect Effects (Short Term) Direct Effects*

The infrastructure and utility construction direct effects would be as result of earthwork. Earthwork would involve surface clearing and grading and subsurface trenching. Additional workspace would be required to perform construction where terrain or when surface or subsurface water control is required during construction. Construction effects from earthwork would be contained on the uplands of the property minimized by utilizing BMPs for stormwater, soil, dewatering, sediment, and blasting control to avoid direct impacts to the property's wetlands, waterbodies, and wildlife.

Roads and associated bridging would be paved for all-weather, year-round access. A plan for roadway drainage, lighting, electrical, and signage has not yet been developed. The subsurface utilities include raw (6- and 12-inches diameter) and potable water (16- and 12-inches diameter), and sanitary (8-inches diameter) and force main (4-inches diameter) sewer lines. Bridge installation would result in the same direct effect as utilities, however, to as much as twice the depth.

Standard heavy equipment tracked and wheeled vehicles would be used to perform site grading and trenching for road and subsurface utility installation. Specialty heavy equipment would be used to perform hard rock hammering and piling installation, hoisting loads of construction materials. In addition, blasting may be required to expedite the removal of hard rock.

No additional direct effects are anticipated for roads and associated subsurface utility installation since they would be constructed during the initial months of each of the 4 phases over the 20 year build-out.

Building and structures construction (residential and utility) would require surface clearing of vegetation, grading including side cuts and subsurface trenching and drilling to install foundations. Standard heavy equipment tracked and wheeled vehicles would be used to perform site grading. Specialty heavy equipment would be used to perform hard rock hammering, piling installation and hoisting loads of construction materials. In addition, blasting would be required to expedite the removal of hard rock. No additional direct effects are anticipated for building and structure installation.

Indirect Effects

The road, utility, building and structure construction indirect effects to off-site vegetation, soil and water resources would be minimized by utilizing BMPs for stormwater, soil, sediment, and blasting control. No additional indirect effects are anticipated.

A.2.13.3 *Operation Direct and Indirect Effects (Long Term)*

The roads, utilities, buildings and structures would be utilized indefinitely and would require annual and periodic maintenance and repair.

Direct Effects

Roads and bridges would require periodic repair that would include patching, resurfacing, and structural replacement. Associated lighting and signage maintenance and repair would be performed periodically as well. Buildings and structures would require routine maintenance and repairs associated with retail, residential, and utility buildings and structures.

The maintenance and repair of buildings and structures would be performed in accordance with the Village at Wolf Creek Property Owner's Association (POA) requirements. In addition, the effects of maintenance or repairs that require earthwork would be minimized by utilizing BMPs for stormwater, soil, and sediment.

Indirect Effects

The indirect effect of maintenance and repair of buildings and structures would typically be to previously impacted areas of the property. The impacted areas are primarily uplands. The nature of the impact could be equal to the initial construction activity (earthwork), however, the extent of the impact would be limited to a specific building or structure. The effects of maintenance and/or repairs to vegetation, soil, and water resources would be minimized by utilizing BMPs for stormwater, soil, sediment, and blasting control. The POA would secure all necessary permits to perform work near or in wetlands or waterbodies. No additional indirect effects are anticipated since maintenance and repairs would be within the private land holdings.

A.2.14 Geology, Minerals and Soils

Soil resources would be effected by construction of the Village. The 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. All of these activities would have an effect on these soils. The Leighcan-Endlich soils occupy the upland areas of the Village. These soils are rocky and have a moderate erosion potential. BMPs 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 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). Site specific studies would be required prior to construction. Avalanches pose a small hazard to the Village (Chen and Associates 1987; and Clark 1987). Consequently, additional assessment of the avalanche hazard is warranted.

The extraction of hard rock minerals is not allowed on the Ski Area (USFS 2004). Leasing for oil and gas exploration and production is allowed, but the surface facilities may not be located on the Ski Area. Consequently, the Village would not effect these resources.

A.2.15 Air Quality and Noise Environment

As described in Section A.1, the Applicant plans to develop a 287.5-acre site in Alberta Park for use as a year round resort providing permanent residences, rental units, and commercial properties to supplement services provided by the adjacent Ski Area. Planned unit development at full build-out is summarized in Table 3.10-1 in Chapter 3.

A.2.15.1 *Construction Direct and Indirect Effects (Short Term)*

Air Quality

The construction effort for the Village 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 PM_{10} 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 (PM_{10} 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.

Noise

Construction of the proposed Village is expected to be typical of other land development projects in terms of schedule, equipment used, and other types of activities. The noise level would vary, depending on the construction phase. Construction can generally be divided into five phases in which different types of construction equipment are used: site preparation and excavation, concrete pouring, steel erection, mechanical, and cleanup. The specific equipment that would be used at the site is not known at this time. Based on similar construction projects, noise would be

produced by a range of construction equipment, including light and heavy trucks, backhoes, bulldozers, graders, cranes, air compressors, welding machines, and power hand tools. Table A.2.15-1 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 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 cyclic, 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 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 to 90 dBA Leq at a distance of 50 feet. The 12-hour average noise level from 7:00 a.m. to 7:00 p.m., assuming 8 hours of work, would likely not exceed 73 dBA at a distance of 50 feet.

Table A.2.15-1. Peak and Attenuated Noise (in dBA) Levels Expected from Operation of Construction Equipment

		Distance From Source			
Source	**Noise Level (Peak)**	**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

As shown in Table A.2.15-1, 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 reduce to 79 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA to 73 dBA at 200 feet from the source to the receptor. Although construction noise would attenuate with distance from the construction area, the noise of heavy equipment working would probably be discernible in the general area of the proposed project site. During the day, the noise would typically combine with noise from traffic and other sources, outside and inside. However, at night when the ambient noise level tends to drop, the same construction noise would be more noticeable.

A.2.15.2 *Operation Direct and Indirect Effects (Long Term)*

Air Quality

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 proposed Village would also result in air pollutant emissions affecting the entire air basin. These regional pollutants would include volatile organic compounds, nitrogen oxides and PM^{-10}.

Vehicle trips associated with the operation of Village 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 include travel by overnight visitors between the Village and outlying areas, supply trips by delivery trucks, and commute trips by staff that work at the Village and live in area towns. 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 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 *Clean Air Act* (CAA) compliance with the Colorado Department of Public Health and Environment (CDPHE), and the U.S. Environmental Protection Agency (EPA) siting, construction, and operation permit requirements.

Noise

Approval and implementation of the proposed development plan would add new residences and non-residential uses to the project site. Vehicular traffic in and around the project site would increase due to the addition of new traffic-generating uses on the site, as further described in Section A.2.9, Traffic and Transportation. 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, noise generated by use of recreational areas and similar noise. Noise impacts would be noticeable to existing recreational users and future residents of the Village.