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Southwestern
Region



Draft Environmental Assessment for the South Pit Pumice Mine Expansion

Jemez Ranger District,
Santa Fe National Forest
Sandoval County, New Mexico

Township 18 North, Range 3 East, Section 25

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Summary

The United States Forest Service–Santa Fe National Forest (Forest Service) proposes to authorize, through a Mineral Material Sale Contract, an operating plan that would allow a 48-acre expansion to the existing 9-acre South Pit Pumice Mine. The proposed expansion area is located adjacent to the existing 9-acre South Pit Pumice Mine, next to Forest Road (FR) 270C, on the Brown Placer Claims #59 and #80 in the Santa Fe National Forest. This location is about 4.5 miles north-northeast of the Paliza Campground and approximately 8.9 miles northeast of the Village of Ponderosa, Sandoval County, Jemez Ranger District (District), Santa Fe National Forest, New Mexico. The proposed action is needed because the current operator of the South Pit Pumice Mine, Copar Pumice Company (Copar), has depleted the current authorized mine area and has submitted an operating plan to expand the existing mine. If authorized, the sale will be advertised for competitive sale and the highest bidder would be offered the Mineral Material Sale Contract. The contracted developer (the Developer) would be required to adopt the operating plan, on which this Environmental Assessment (EA) and the subsequent Record of Decision are/will be based.

This EA includes analyses of three alternatives that represent the range of reasonable actions that could be taken by the Forest Service in response to scoping comments:

- No Action – The Forest Service would not authorize expansion of the pumice mine and no Mineral Material Sale Contract would be issued.
- Proposed Action – The Forest Service would authorize the pumice mine with permission to haul no more than six truckloads of pumice per day (current management).
- Reduced-Traffic Alternative – The Forest Service would authorize the pumice mine expansion with permission to haul no more than four truckloads of pumice per day.

The Santa Fe National Forest Supervisor would decide whether or not to sell the mineral rights at the proposed South Pit Pumice Mine and, if the sale is approved, the number of truckloads per day that could be hauled from the mine. These decisions will be based on the analysis of impacts for the alternatives, as disclosed in this document and the project record. This document also presents mining, reclamation and other impact mitigation requirements that would be included as stipulations to mineral sales.

The Forest Service conducted public scoping in the fall of 2005. The major concerns expressed during scoping were mine-related truck traffic and its impacts on safety, including cumulative impacts to traffic. Also identified during public scoping was concern about impacts to water quality and to wildlife.

1.0 PURPOSE AND NEED

1.1 DOCUMENT STRUCTURE

The Santa Fe National Forest (Forest Service) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. In addition, best available science has been considered throughout the entire analysis process and into this document. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

- *Chapter 1, Introduction:* This section includes information on the history of the proposed project, the purpose of and need for the project, and the Forest Service's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- *Chapter 2, Comparison of Alternatives:* This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed to explore the impacts that were raised as concerns during scoping. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- *Chapter 3, Affected Environment and Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by impact topics raised during internal and external scoping. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative, which provides a baseline for evaluation and comparison of the two action alternatives.
- *Chapter 4, Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the EA.
- *Appendixes:* These provide more-detailed information to support the analyses presented in the EA.

Additional documentation, including more detailed analyses of project area resources, may be found in the project planning record (project record) located at the Jemez Ranger District (District) Office in Jemez Springs, New Mexico.

1.2 BACKGROUND

Pumice products mined in the Jemez Mountains of the Santa Fe National Forest are used for construction, laundry agents, soil amendments, and the creation of artificial rock molding, amongst other uses. Since the 1940s, various companies

have mined pumice on Santa Fe National Forest lands. During this period, pumice has been recovered from many locations within the District, including, but not limited to, the Guaje Canyon and Las Conchas Mines, which are now inactive; the Cerro del Pino and El Cajete Mines, which are currently operational; and the South Pit Pumice Mine, which is at the end of its viability as currently authorized.

The 9-acre South Pit Pumice Mine was permitted in 1996 for removal of common-variety pumice. In December 2004, Copar recognized that the current 9-acre mine would soon be depleted and submitted an application to the Jemez Ranger District to expand their site by 100 acres.

Based on scoping conducted in October and November 2005, the Forest Service determined that the proposed 100-acre pumice mine and temporary access road would be analyzed in accordance with NEPA through an EA. Subsequently, Copar submitted a revised Plan of Operation in July 2007 to expand the existing South Pit Pumice Mine by only 48 acres. Analysis for the currently proposed alternatives would focus on impacts from mining on the access road and the entire 48-acre site and would include analysis of traffic and air quality impacts in surrounding areas.

Once the environmental analyses and NEPA are completed, the Forest Service will determine (1) whether or not the project is in the best interest of the public, and if so, (2) what stipulations would be applied or (3) whether additional analysis may be needed through an Environmental Impact Statement. If approved, the sale would be advertised for bid and the highest bidder would be offered the contract. The contracted mine developer (the Developer) would adopt the operating plan on which this EA is based.

1.3 PURPOSE AND NEED FOR ACTION

The purpose of the proposed action is to make minable minerals available for sale to the public, consistent with the Federal Land and Policy Management Act of 1976, 36 CFR 228 Subpart C, and the Santa Fe National Forest Land and Resource Management Plan (United States Department of Agriculture [USDA] Forest Service 1987), as amended. The need for the action is to respond to the proposed mine expansion and operating plan for the South Pit Pumice Mine, on which this EA is based.

1.4 PROPOSED ACTION

The action proposed by the Forest Service to meet the purpose and need is to authorize the contract for the sale of pumice, by competitive sale, which would be mined from the South Pit Pumice Mine site in accordance with the operating plan on which this EA is based (see project record). Authorization of the operating plan would be supplemented with a Santa Fe National Forest-approved

reclamation plan and would include any additional stipulations needed to meet state and federal regulations. The reclamation plan is attached as Appendix 1.

The Developer would be required to obtain a road use permit (36 CFR 251.50) before hauling on any Forest System Road. The information included in this EA will be used as the environmental clearance record required to obtain a Road Use Permit. The Road Use Permit would be valid for a 10-year period, and would allow the use of commercial vehicles for hauling of equipment and pumice.

The following summarizes the proposed action. This plan would be adopted by the mine Developer, after sale of the minerals through an open bidding process.

Access to the mine location would be on the same roads used to access the existing South Pit Pumice Mine from San Ysidro, New Mexico, a total of about 25 miles. From State Highway 550 proceed north on State Highway 4 for 6.2 miles, then northeast on State Road (SR) 290, just north of Jemez Pueblo, for 6.9 miles through the Village of Ponderosa, then 8.8 miles on Forest Road (FR) 10, then 1.2 miles on FR 270, then 0.7 mile on FR 270C to the existing mine (**Figure 1.1**). Access to the proposed expansion area would require the construction of a temporary road. This temporary access road would be constructed along the southern boundary of the existing South Pit Pumice Mine and would be reclaimed according to the reclamation plan attached as Appendix 1. Vehicles that would travel the access road include pickups; 25-ton, 18-wheeled haul trucks; a lube truck; a fuel truck; a lowboy (to haul bulldozers and loaders); and other passenger vehicles. The Developer would obtain a renewal of the existing Road Use Permit and would implement all road use mitigation measures discussed in this EA.

The operating plan calls for pumice mining activities to occur over a 10-year period, administered through 5-year contracts on a maximum of 48 additional acres in two 24-acre tracts, divided into 8-acre sections. Should portions of the 48-acre area not be mined by the end of the 10-year period authorized in the plan of operations, this leftover area would need to undergo further analysis under NEPA prior to additional mining.

Mining is proposed to be by open-pit method to approximately 30 feet deep. The mine would be operational between the hours of 7:00 A.M. and 6:00 P.M., only on weekdays (five days a week), excluding all major holidays (including the Pueblo of Jemez Feast Days), beginning after all permitting and approvals are complete.

No permanent structures or facilities would be constructed at the mine, and no pumice processing would be done at the mining site. Pumice deposits would be mined using bulldozers and front-end loaders. The loader would be used to load 25-ton, 18-wheeled dump trucks to haul the mined material to the development site. Approximately 750 tons per week of pumice would be mined, based on a five-day-per-week production schedule. The operating plan calls for no more than six loads (six round trips) to be hauled per day from the site. Pumice-hauling

would be restricted to occur between the hours of 8:00 A.M. and 5:00 P.M. In addition, mine traffic would not be allowed between 7:30 and 8:30 A.M. and between 3:00 and 4:00 P.M. when the Jemez Valley School is in session.

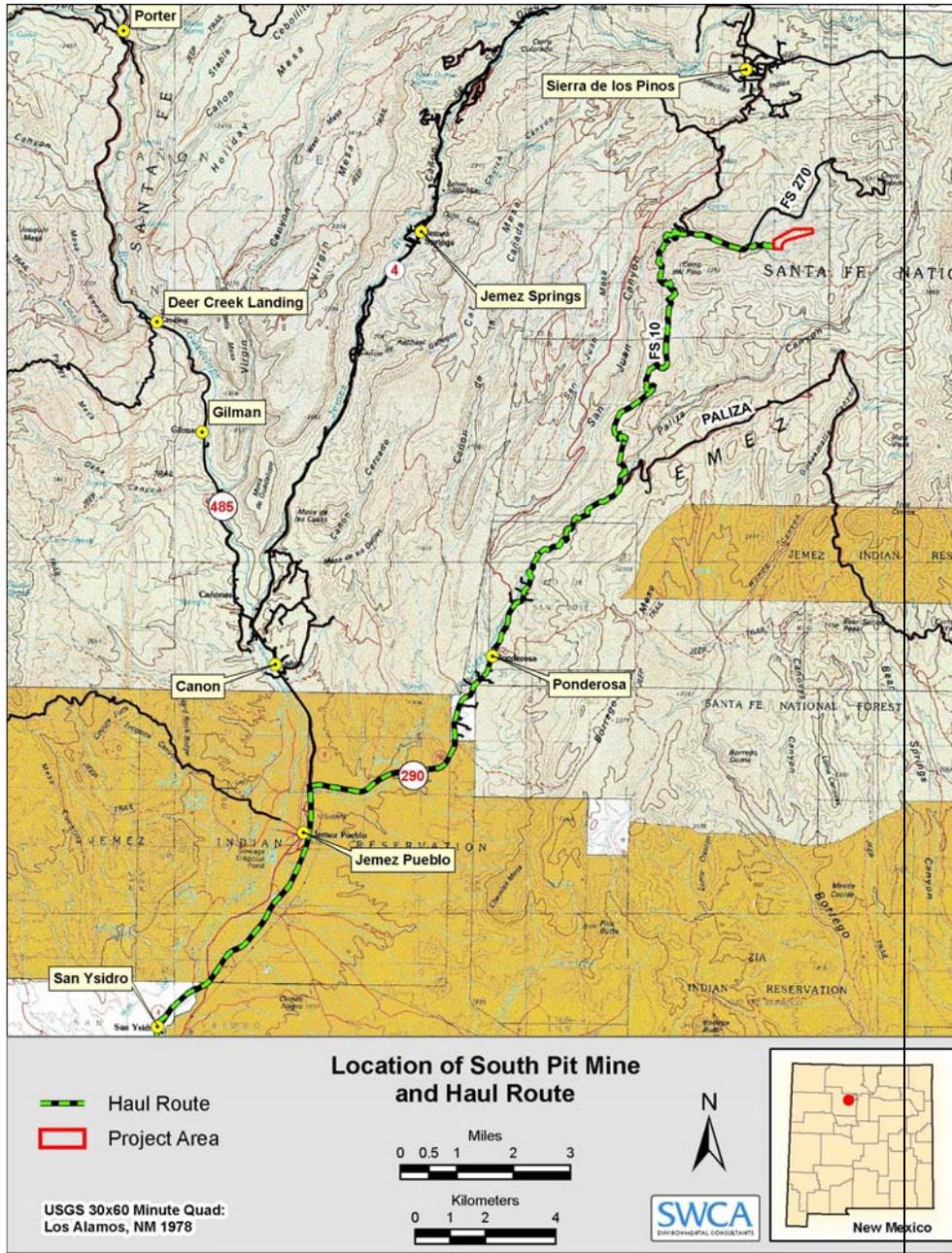


Figure 1.1. Project area showing the location of the South Pit Pumice Mine, the haul route to San Ysidro, and local communities.

The mine will be divided into two 24 acre tracts labeled B-1 and C-1. Mining and reclamation will take place in the 24 acre tract using three 8-acre sections. As mining proceeds, the actively mined block would be cleared, as needed, in 8-acre increments. The trees would be cut and topsoil would be removed from the active mine area. Salvaged topsoil would be stockpiled on site at a location and in a manner to limit the potential for erosion. Soils would be stripped and stored uncompacted up to 8 feet high. These piles would be seeded with annual ryegrass, winter wheat, and/or streambank wheatgrass to prevent mobilization of windblown soil particles. All timber and slash materials removed during site preparation would be retained to aid in final reclamation.

Reclamation would begin as soon as two 8-acre areas are open, ensuring that no more than 16 acres are open at any one time. Reclamation, which is described in more detail in Appendix I, would include the following major components:

- Recontouring the site to mimic the pre-mining topography, while blending into the surrounding topography, with slopes that will not exceed 25 degrees;
- spreading salvaged topsoil, timber, slash, and logs over the mined area to help control erosion and prepare the site for seeding;
- re-vegetating the affected area by applying a Santa Fe National Forest-approved seed mix; and
- constructing erosion-control structures, as warranted following re-contouring and re-vegetation.

1.5 DECISION FRAMEWORK

In accordance with the Federal Land and Policy Management Act of 1976, 36 CFR 228 Subpart C, and the Santa Fe National Forest Land and Resource Management Plan (USDA Forest Service 1987) as amended, a decision based on this EA would respond to the plan of operations submitted by Copar for lease and operation of the South Pit Pumice Mine.

Given the purpose and need, the deciding official reviews the proposed action and the other alternatives in order to make the following decisions:

- Should the Santa Fe National Forest issue a Mineral Material Sale Contract for this material? Issuing a mineral sale contract for the extraction of common variety pumice is a discretionary action.
- If it is appropriate to issue a contract, how many pumice-hauling loads per day are reasonable?

The Santa Fe National District Ranger, as the responsible official, would decide whether to implement an action alternative with all stated mitigation and monitoring requirements, whether to implement the No Action Alternative, or if documentation in an Environmental Impact Statement is required.

1.6 PROJECT AREA

The proposed 48-acre pumice mine would be adjacent to and would be an extension of the 9-acre pumice mine currently operated by Copar (Figure 1.2). The mine is located generally on a volcanic upland plateau area, which makes up the flanks of Valles Caldera, the central volcanic feature of the Jemez Mountains. The upland plateaus have been dissected by the radial drainage pattern extending from the central Valles Caldera. There are no permanent streams located directly in the project area; however, an ephemeral side drainage exists south of the proposed expansion area. This ephemeral drainage runs southeast to northwest into San Juan Canyon.

1.7 RELATIONSHIP TO FOREST PLAN

The Santa Fe National Forest Plan (Forest Plan) (USDA Forest Service 1987), as amended, provides direction and standards for managing lands in and adjacent to the proposed expansion of the South Pit Pumice Mine. Direction for mining on the Santa Fe National Forest is found on pages 80–82 in Chapter 4–Management Direction. Standards and guidelines for the management area in which the proposed pumice mine expansion occurs are located on pages 157–160 in Standards and Guidelines for Management Area P.

The proposed South Pit Pumice Mine expansion is located entirely within Management Area P, which includes an emphasis on "cultural resource location, inventory nomination, and protection." The Forest Plan indicates that Management Area P does not have any prescriptions specific to mineral material sales; however, the Forest Plan does include applicable forest-wide prescriptions:

- Respond to requests for large quantities of mineral materials through the NEPA process, advertised sale (if appropriate), and permit administration where not needed for administrative use;
 - Control surface uses in mineral operations through plans of operation and permits, which provide for
 - meeting visual quality objectives,
 - preservation of water quality,
 - protecting watershed values,
 - reclamation to original or characteristic contours or adapted to serve further surface resource uses,
 - re-vegetation or re-forestation with appropriate species to attain soil stability,
 - cultural resources,
 - threatened and endangered species and other wildlife habitats,

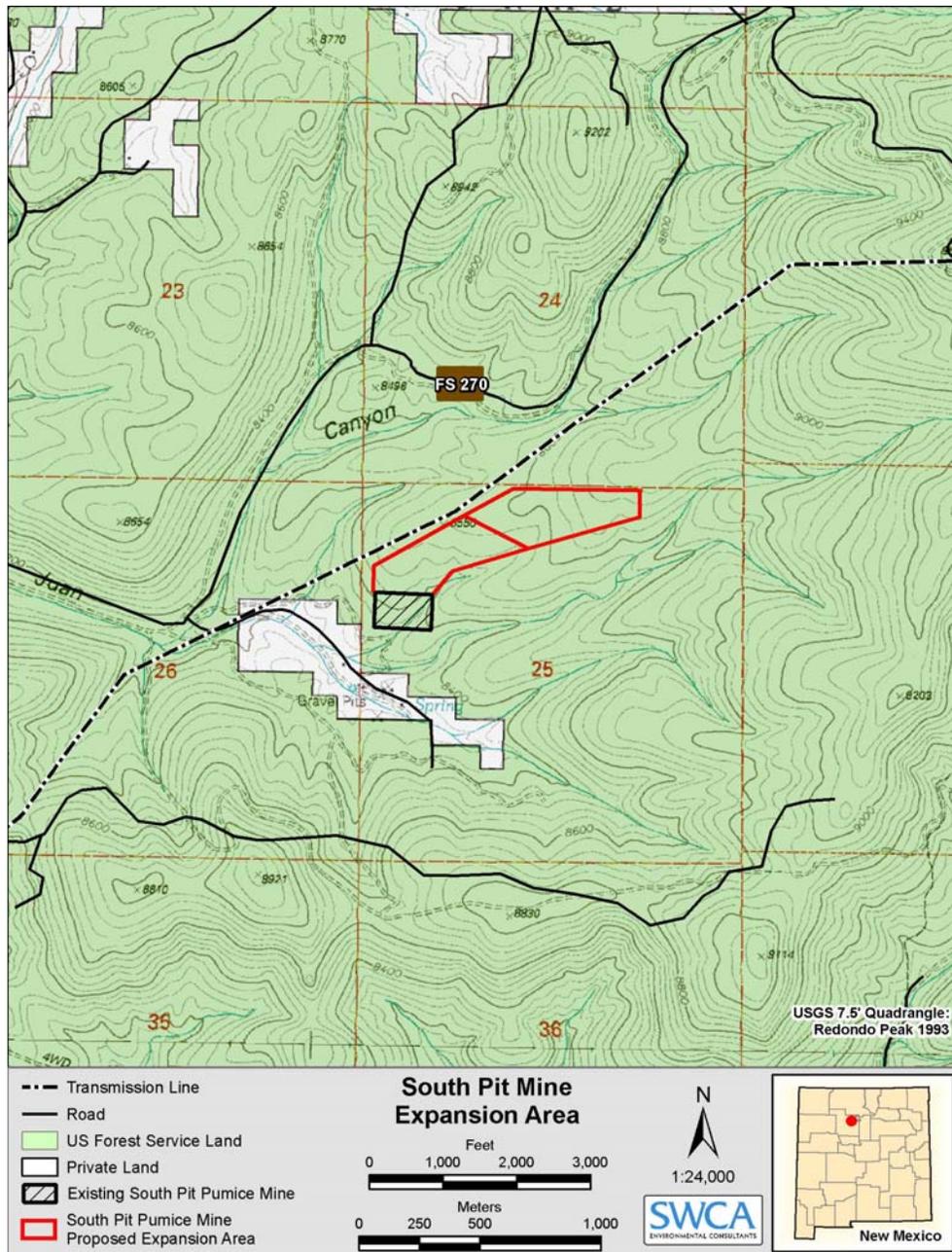


Figure 1.2. South Pit Pumice Mine expansion area.

- Ensure reclamation of mineral areas to restore resource damage and remove public safety hazards, as needed. Reclamation will be managed for

progressive development and rehabilitation. Operating plans, including appropriate bonding (or the set-aside of a lump sum of money to ensure compliance), will be the means for accomplishing this; and

- Undertake mineral examination and contest actions and claims where activity is inconsistent with the mining laws.

1.8 PUBLIC INVOLVEMENT

The Forest Service completed scoping for the proposed South Pit Pumice Mine expansion along with a newly proposed pumice mine (Cerro del Pino Pumice Mine), currently operated by Utility Block Co., Inc. Although many scoping responses separately commented on each mine proposal, many comments received did not specify which mine proposal the comment addressed. In those situations where the commenter did not identify a specific proposal, the comment was considered for both mine proposals.

The South Pit Pumice Mine proposal was first listed on the Schedule of Proposed Actions (SOPA) dated April 1, 2004, to June 30, 2004. It has remained on the SOPA since that time. The proposal was provided to the public and other agencies for comment during scoping on October 3, 2005, through November 21, 2005. In addition, as part of the public involvement process, the Forest Service held two public meetings announced in the local newspaper (one in Ponderosa and one at the Wallatowa Visitors Center), met with the local Pueblo of Jemez, held on site meetings with mine applicants, posted notices in local communities, and sent e-mails and letters to local agencies. The scoping notice with information on the proposed project and upcoming public meetings was sent with the October water bill to the residents of the Village of Ponderosa.

In compliance with 36 CFR 215, a description of the proposed action, some possible alternatives, and anticipated effects will be made available through a 30-day comment period beginning on the date of a publication of a legal notice that will be published in the *Albuquerque Journal*. This Preliminary EA will be finalized after considering comments received during the 30-day period. The Final EA would be the primary document used to inform the decision-making process.

1.9 IMPACT TOPICS INCLUDED IN THIS DOCUMENT

Impact topics identified during scoping were determined to be either potentially significant or not significant. Potentially significant impacts were defined as those directly or indirectly caused by implementing the proposed action and these topics have been carried through this analysis. Not-significant issues were identified as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan, or other higher level decision; (3) irrelevant to the

decision to be made; or (4) conjectural and not supported by scientific or factual evidence. Not-significant impact topics were dismissed from further study.

The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)."

The Forest Service identified three impact topics raised during scoping as being potentially significant and they are carried through impacts analysis in this document. These impact topics are:

Traffic: The number of pumice-hauling trucks that would travel to and from the proposed mine site was a primary issue identified during the public scoping process. The main concerns associated with pumice truck traffic included safety (of Forest users, nearby residents, schoolchildren, and pets); truck noise in the Village of Ponderosa; conflicts between pumice hauling and other projects on FR 10; and more pollutants in the air putting people at risk.

Water Quality: Effects of the proposal on surfacewater and groundwater quality.

Wildlife: Effects of the proposal on wildlife.

Other issues discussed in this analysis include an analysis of **Heritage Resources** and **Air Quality**. The proposed South Pit Pumice Mine is located entirely within Management Area P, which includes an emphasis on "cultural resource location, inventory, nomination, and protection."

2.0 ALTERNATIVES

This chapter describes and compares the alternatives considered by the Forest Service for the proposed South Pit Pumice Mine expansion. Included in this chapter is a discussion of how alternatives were developed; an overview of mitigation measures, monitoring, and other features common to both action alternatives; a description and map of each alternative considered in detail; and a comparison of the alternatives and their potential impacts relative to the topics identified in Chapter 1. Chapter 2 is intended to be a comparative presentation of the alternatives to inform the public and provide a clear basis for decision making by the responsible official (40 CFR 1502.14).

Some of the information used to compare alternatives at the end of Chapter 2 is summarized from Chapter 3, Environmental Consequences. Chapter 3 contains the detailed scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, readers are directed to Chapter 3.

2.1 ALTERNATIVE DEVELOPMENT PROCESS

The Forest Service interdisciplinary team (IDT) used information from scoping, (see Chapter 1), in conjunction with field-related resource information, to formulate alternatives to the proposed action. The action alternatives presented in this EA provide different responses to the impact topics and each alternative may respond to more than one topic. Each action alternative is also designed to meet the stated purpose and need for the South Pit Pumice Mine expansion and the project-specific desired conditions.

The two proposed action alternatives were developed through interdisciplinary evaluation of current and desired conditions, based on field verification. The IDT made use of high-resolution topographic maps and geographic information system (GIS)-based resource data to identify the project area and create a preliminary project design.

2.2 FOREST PLAN CONSISTENCY

All applicable forest-wide and management area standards and guidelines have been incorporated into all alternative project designs. The Forest Service uses many mitigation and preventive measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project.

Both of the action alternatives (Alternative 2–Proposed Action, and Alternative 3–Reduced Traffic) would not be in compliance with Forest Plan guidelines for the management of the northern goshawk as stated in the Forest Plan (USDA

Forest Service 1987; Amendment #6, October 1996, pg. 9), as amended. Specifically guidelines for management of the northern goshawk in ponderosa pine habitat limit forest openings to 4 acres and suggest that each acre has two snags. As a result, approval of a 48-acre expansion of the existing South Pit Pumice Mine and mining under either Alternative 2 or 3 would require a project-specific amendment to the Forest Plan to address this issue.

2.3 PROJECT-SPECIFIC MITIGATION

The analysis documented in this EA discloses the possible adverse and beneficial effects that may occur from implementing the actions proposed under each alternative. Measures have been formulated to avoid, minimize, or mitigate adverse impacts. These measures were guided by the direction from the Santa Fe National Forest Plan (USDA Forest Service 1987), as amended, previously described (in Chapter 1 and in this chapter).

IDT specialists use on-the-ground inventories, computer (GIS) data, and various studies to prepare their reports. Resource reports show the cause and effect relationships between the alternatives and their specific impacts and indicate mitigation measures to reduce or eliminate those adverse effects in the design of the alternatives. These reports are summarized and referenced in this EA and may be found in the project record. Resource concerns and mitigation measures may be refined further during final design when specialists would have another opportunity to revise their recommendations. Resource concerns and mitigation measures may also be refined during project implementation (in this case, active mining) in response to changing conditions (e.g., wildfire) or unanticipated impacts (e.g., discovery of spotted bat colony).

Applicable Santa Fe National Forest Plan (USDA Forest Service 1987), as amended, standards and guidelines, the "Best Management Practices" (BMPs) used to meet the requirements of the Clean Water Act and Clean Air Act, and project-specific mitigation measures are addressed below and would be included in the design criteria for both action alternatives (Alternatives 2 and 3).

To minimize potential traffic impacts such as reduced safety, increased noise, and increased road congestion resulting from the proposed operation and pumice hauling, the following design criteria would be required:

- The Developer would be required to apply for a Road Use Permit from the Santa Fe National Forest to use FR 10. The Road Use Permit would require the operator to maintain the road to Forest Service standards.
- Mine traffic would be restricted during school days. On school days (when the Jemez Valley School is in session), mine traffic through the Village of Ponderosa would not allowed between 7:30 and 8:30 A.M. and 3:00 and 4:00 P.M.

- All pumice hauling would occur Monday through Friday. Hauling would not be allowed during the Memorial Day, Labor Day, or Independence Day holidays; during the Pueblo of Jemez Feast Days; or during seasonal restrictions such as road closures due to winter conditions (usually Jan 1–May 15) or fire closures (decided based on road or forest conditions and made by the District Ranger and the Forest Service Supervisor).
- Pumice trucks hauling materials on FR 10 would be *limited to 25 miles per hour (mph)* or less, as otherwise posted such as near Paliza Campground, to facilitate safety and to minimize dust.
- To reduce noise along the haul route, the hauling permit would include a restriction that no engine (Jake) brakes would be allowed on any Forest Road.
- Trucks hauling pumice will need to be covered to prevent the distribution of dust

To minimize impacts to threatened and endangered species, migratory birds, other wildlife, and their habitats, the following design criteria would be required:

- Impacts to terrestrial habitats would be minimized by using existing roads and cleared staging areas. Equipment operation would take place in the most open area available, and all efforts would be made to minimize damage to native vegetation outside of the designated 48-acre South Pit Pumice Mine expansion area.
- The active mining site will be surrounded by a perimeter fence and direct vegetation disturbances will occur outside of the fenced boundary.
- To avoid and minimize impacts to nesting birds, no tree removal may occur from March 1 to August 15 each year.
- If a bald eagle (*Haliaeetus leucocephalus*), Mexican spotted owl (*Strix occidentalis lucida*), northern goshawk (*Accipiter gentiles*), or American peregrine falcon (*Falco peregrinus anatum*) is observed within 0.25 mile of the proposed South Pit Pumice Mine expansion area, the Developer would suspend all mining activity and Jemez Ranger District personnel would be notified immediately.
- Northern goshawk surveys would be completed by qualified goshawk surveyors using the methods detailed in the Southwestern Region Northern Goshawk Inventory Protocol (USDA Forest Service 1995) before any work at the proposed expansion area commences. In the event that female goshawks are encountered during the survey, a nest search of the area would be implemented. If male goshawks are encountered the search perimeter would be widened. In the event that goshawk individuals are located within 0.5 mile of the project area, consultation with the District Biologist would commence to identify the appropriate avoidance/mitigation measures that should be implemented to ensure the individual is left undisturbed. If a goshawk nest is located during future pumice activities (i.e., following the pre-disturbance survey), work at the site would immediately stop and the District Biologist would be consulted to help ensure no disturbance to the nest occurs until young are fledged and to identify a safe period to commence with cutting in

the nest area. Additional surveys might be required prior to any new clearing scheduled between March 1 and August 15. The surveys would not be required in areas previously cleared.

- To avoid direct impacts to migratory birds protected by the Migratory Bird Treaty Act (16 U.S.C. 703, et seq.), clearing of vegetation would be scheduled between August 15 and March 1, outside of the normal breeding season for most avian species. Should vegetation removal be required during the breeding season, pre-construction breeding bird surveys would be conducted by qualified personnel to ensure that no breeding birds would be affected. Any positive pre-construction survey results or observation of affected species during construction would be discussed with the District Biologist to coordinate nesting area avoidance.
- To reduce disturbance in a peregrine falcon suitable habitat area during the early breeding season (March 1 through May 15), trucks hauling pumice would not haul before 10 A.M. and would not use Jake brakes from the junction of FR 10 and FR 266 to the beginning of blacktop pavement north of the Village of Ponderosa. In addition, strict adherence to the 10 mph speed limit near the Paliza Group and Paliza Family Campground would be emphasized.

To minimize long-term impacts and to meet visual quality objectives, the following design criteria would be required:

- No mined material would be stockpiled on site (topsoil would be stockpiled for use during reclamation).
- No permanent structures would be constructed as part of the mine, although at least one self-contained portable toilet is required to be on the site during all operations. Earthen structures such as berms and catchments for water and erosion control are allowed.

Reclamation would be required to restore resource damage, improve visual integrity, and remove public safety hazards:

- The permit would require concurrent reclamation so that no more than 16 acres would be unreclaimed at any one time.
- The permit would require that the project site be seeded with native vegetation and mulched with weed-free straw.
- Because revegetation may take 3 to 6 years to become successful, the Forest Service would hold the Developer's bond after the contract is ended until satisfied with the reclamation.

To preserve water quality and protect watershed value, the following design criteria would be required:

- The Developer would be required to submit detailed design specifications for erosion control. The Forest Service would conduct monitoring of erosion-control practices.

- Erosion-control barriers made of straw bales, straw wattles, and/or silt fencing would be constructed as needed during mining or reclamation to prevent erosion from occurring.
- During mining, the mine pit areas would be designed to internally drain.
- Soil would be stockpiled in situ and replaced during reclamation so that the "A" horizon is on the surface.
- Storage of fuel or oil would not be permitted at the project site.
- Equipment would be fueled and lubricated in a spill-containment facility constructed by the Developer. Used oil and other waste products must be collected and disposed of in an authorized facility off of Santa Fe National Forest lands.
- A spill kit for each piece of heavy machinery would be required to be kept on site. Spills must be reported immediately to Santa Fe National Forest authorized officer, who may shut down the mine until the spill is remediated. Spills would be contained, and contaminated pumice would be disposed of in an authorized facility off of Santa Fe National Forest lands.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The following three alternatives were discussed by an IDT of resource specialists but eliminated from detailed study in this EA.

Hauling Material North through Sierra de los Pinos

A comment presented more than once during scoping was the consideration of only allowing pumice trucks to transport pumice north on FR 10 from the mine site, through the community of Sierra los Pinos, to State Highway 4. This requirement would change the current route of hauling trucks, which are required to go south on FR 10, to State Highway 290 through Ponderosa, and onto the southern portion of State Highway 4.

Requiring at least a portion of pumice hauling to go through Sierra los Pinos would seem to be a more equitable alternative; however, this option would most likely result in additional safety and economic impacts. Requiring pumice trucks to go the northern route would result in more drivers (of other vehicles) being impacted by pumice hauling, and it would not address traffic issues along State Highway 4. Because this alternative would result in more haul miles, resulting in increased opportunity for accidents and traffic conflicts, it was eliminated from further consideration. However, a 2006 inspection determined that the Vallecitos Creek bridge (at SR 290, 1/4 mile east of Ponderosa) was structurally deficient (NMDOT 2006). Although previously rated for a maximum load of 60,000 pounds, the New Mexico Department of Transportation (NMDOT) has requested a re-evaluation based on the 2006 inspection report. A revised load rating at this

bridge could affect future use by large trucks and require reconsideration of this alternative.

Hauling Less Than Four Loads per Day

This potential alternative was identified as a result of scoping, which found traffic and traffic-related impacts from pumice hauling as a primary concern of local communities. An alternative to authorize the proposed mine with a condition that less than four loads of pumice are hauled per day would result in unreasonable logistical and economic impacts to the Developer. Should the mine be authorized to haul less than four loads per day, it is unlikely that all of the pumice at the site would be able to be removed within the term of the Special Use authorization (project record).

Because this alternative would reduce the feasibility of the mine expansion and would result in a longer mining period, it was eliminated from further consideration.

Increase in Loads per Day (More than Six)

An increase in pumice hauling truckloads above the current six loads per day was discussed as a possible alternative. This option was eliminated from further study based on the results of scoping, which identified traffic and traffic-related impacts resulting from pumice hauling as a primary concern of local communities.

2.5 ALTERNATIVES CONSIDERED IN DETAIL

Alternative 1 (No Action)

Under the No Action Alternative, current management plans would continue to guide management of the project area. The proposed pumice mine expansion would not be authorized. There would be no mine-associated traffic once the reclamation of the open pit is completed, which is expected to be during 2007.

Alternative 2 (Proposed Action)

This alternative would include approval of a Mineral Material Sale Contract for pumice mining in two 5-year contracts for up to 10 years at a site adjacent to the existing South Pit Pumice Mine, northeast of Cerro del Pino. The proposed site is approximately 48 acres and would be mined by a Developer selected through an open bidding process. At the end of the first, 5-year contract, the Forest Service would review whether the operation is still in the best interest of the public. If it is deemed so, the Forest Service would re-appraise the pumice mine area and issue a second 5-year contract.

This alternative would maintain current operating capacity of the mine by authorizing six truckloads per day of pumice to be hauled from the proposed mine site on Forest Service Roads. Selection of this alternative would maintain the current truck traffic authorized for the South Pit Pumice Mine.

Alternative 3 (Reduced Traffic)

This alternative would include approval of a Mineral Material Sale Contract for pumice mining for up to 10 years at a site adjacent to the existing South Pit Pumice Mine, northeast of Cerro del Pino. The proposed site is approximately 48 acres and would be mined by a Developer selected through an open bidding process. At the end of the first 5-year contract, the Forest Service would review whether the operation is still in the best interest of the public. If it is deemed so, the Forest Service would re-appraise the pumice and issue a second 5-year contract.

This alternative would reduce the current operating capacity of the mine from an average of just over six truckloads per day to four truckloads per day to be hauled from the proposed mine site on Forest Service Roads. Selection of this alternative would decrease the amount of truck traffic currently authorized for the South Pit Pumice Mine.

All mining activities besides hauling would remain the same, including reclamation. A reduced rate of pumice extraction from the mine makes it less likely that mining of the area will be completed in less than 10 years.

Table 2.1 provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and impacts that can be distinguished quantitatively or qualitatively among alternatives.

1. Comparison of Alternatives

	Alternative 1—No Action	Alternative 2—Proposed Action (Six Loads/Day)	Alternative 3—Reduced Traffic (Four Loads/Day)
How well does the alternative respond to Forest Plan management guidance?	<ul style="list-style-type: none"> Does not meet Forest Plan guidance N/A N/A 	<ul style="list-style-type: none"> Would meet Forest Plan guidance. Project design criteria and mitigations would minimize impacts associated with project implementation. Ongoing reclamation would be required during mining operations. Monitoring of reclamation would occur to ensure compliance with reclamation mitigations and specifications. 	<ul style="list-style-type: none"> Would meet Forest Plan guidance. Project design criteria and mitigations would minimize impacts associated with project implementation. Ongoing reclamation would be required during mining operations. Monitoring of reclamation would occur to ensure compliance with reclamation mitigations and specifications.
How does each alternative respond to the impact topics			
Traffic	<ul style="list-style-type: none"> Once the existing Copar-operated pumice mine on FR 10 is fully reclaimed, the number of truck trips would decrease by approximately seven round trips per haul day or three round trips per calendar day along the haul route. 	<ul style="list-style-type: none"> The Developer would continue to haul six round trips of pumice per day (excluding weekends and holidays). Road use conflicts on FR 10 would be most likely to occur in May–July during high recreational use and from September through November during hunting season. 	<ul style="list-style-type: none"> The Developer would be limited to hauling four round-trips of pumice per day. Traffic conflicts would still likely occur, but at a reduced rate, during high recreational use or during other Forest Service-approved activities; however, pumice hauling would be less frequent.
Water quality	<ul style="list-style-type: none"> No impacts 	<ul style="list-style-type: none"> Project design criteria and mitigation measures would minimize potential impacts to nearby surfacewater and groundwater sources. 	<ul style="list-style-type: none"> Project design criteria and mitigation measures would minimize potential impacts to nearby surfacewater and groundwater sources.
Wildlife	<ul style="list-style-type: none"> No impacts 	<ul style="list-style-type: none"> Mining operations would include the direct impact of removing 48 acres of ponderosa pine habitat for a variety of local species 	<ul style="list-style-type: none"> Mining operations would include the direct impact of removing 48 acres of ponderosa pine habitat for a variety of local species

	Alternative 1–No Action	Alternative 2–Proposed Action (Six Loads/Day)	Alternative 3–Reduced Traffic (Four Loads/Day)
			would have a slightly smaller impact.
conomics	<ul style="list-style-type: none"> This alternative would reduce the local mining and trucking activity, likely resulting in the reduction of several jobs/employees. 	<ul style="list-style-type: none"> Mining operations and pumice hauling activity would remain the same as is currently practiced. 	<ul style="list-style-type: none"> Reducing the amount of authorized pumice hauling would slightly reduce the need for pumice truck drivers by the company, potentially impacting one or two jobs. Reduced profits as a result of less pumice is a possibility, but expected to be of negligible effect.

N/A = not applicable

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the physical, biological, social, and economic environments of the affected project area and the potential changes to those environments due to implementation of the proposed alternatives. Chapter 3 also presents the scientific and analytical basis for comparison of alternatives presented in Table 2.1. This chapter is organized by resource and incorporates the best available science, where appropriate. Within each resource discussion, the affected environment is briefly described, followed by the environmental consequences (effects) of implementing each alternative.

3.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIVITIES USED FOR CONSIDERATION OF CUMULATIVE EFFECTS

Discussion of environmental effects in Chapter 3 is placed in the context of past, present, and future environmental change that together make the cumulative impacts scenario. The activities described in Table 3.1 have been identified as potentially contributing, cumulatively, to the impacts analyzed in this EA. These activities have been or will be part of the incremental change in ecological conditions in the project area, and may continue to influence conditions in the project area over the term of the project. Foreseeable future actions are those for which a proposed action has been approved or those proposed for NEPA analysis in the near future. Any other possible future actions are considered too speculative to include in the cumulative impacts scenario.

Present, and Foreseeable Actions that Comprise the Cumulative Impacts Scenario

	Date of Action	Area	Size *	Comments
and nt EA	February 2006 through November 2009	Paliza Canyon, Guacamalla Canyon, Borrego Canyon, and parts of Cerro del Pino	7,000 acres	Prescribed burning in the Paliza area outside of the proposed South Pit Pumice Mine expansion location would contribute to traffic on FR 10 and SR 290 during periods of active burning in the fall and possibly spring for the next several years. The southern portion of FR 10 would be a primary access road for much of the Paliza project and would experience temporary traffic impacts from fire personnel during prescribed fire activities.
ment	February 2006 through November 2009	Paliza Canyon, Guacamalla Canyon, Borrego Canyon, and parts of Cerro del Pino	2,100 acres	
	Completed in fall 2004	San Juan Mesa	6,200 acres	Approximately 1.5 miles west of the proposed South Pit Pumice Mine expansion.
Vegetation Treatments				
Recorded past timber sales or vegetation treatments at the location of the proposed South Pit Pumice Mine expansion. Past activities recorded within proposed project site include the following:				
and nt	Completed 1999	Paliza	1,700 acres	Vegetation management activities on approximately 1,700 acres in the Paliza management area.
Sale	Completed 1982	San Juan Mesa	1,200 acres	1,200-acre timber sale.
nd	Implementation planned for 2007–2008	Paliza Group and Family Campgrounds	95 acres	95 acres in the Paliza Group and Family Campgrounds would be treated by cutting and removal of ponderosa pine trees. All activities would take place from October through March when campgrounds are closed to the public. This operation could include the use of a skidder, loader, logging truck, and pickup truck for a period of up to one month. Activities would take place when campgrounds are closed and equipment such as the skidder and loader would remain on site during treatments.
Recorded recent wildfires at the South Pit Pumice Mine expansion project location. There have been, however, seven wildfires recorded within within project. Wildfires recorded near the proposed project area have been 100 acres or less in size with the exception of the 400-acre Nicole Fire in 1996 Labor Fire in 2002.				
be implemented in times of extreme fire risk. A closure order for the Jemez Ranger District would prevent any access to lands in the Jemez unless otherwise approved. Closure of the Forest due to fire risk could result in potential increased concentrations of traffic on regular roads such periods before or after closure.				
ent	Ongoing seasonal grazing (June 1–October 1)	Paliza	N/A	The proposed mine site is located within the Vallecitos grazing allotment. The proposed project site is located more than 1 n development and approximately 0.5 mile from monitoring. Range management activities and permittee access via FRs 10, 270, and 270C may contribute to traffic. Comment: Check with Mike D. or Josephine W.
only used graded road that provides access to popular camping areas and can be used to access much of the southeastern area of the Jemez				

	Date of Action	Area	Size *	Comments
				concentrated seasonally from Memorial Day through Labor Day primarily during weekends.
Line	Will be completed by December 31, 2007	From Village of Ponderosa north to Paliza Campground along FR 10	3 miles	Installation of a water distribution pipeline in the southern portion of FR 10 will be completed prior to mine development and will not result in local traffic delays or temporary road closures.
ation				
oval	This activity may occur in 2008 or later	Southern 12 miles of FR 10 right-of-way	15 feet on either side of FR 10, 12 miles long (approx. 45 acres)	Tree removal on either side of FR 10 has yet to be implemented besides marking of trees. Implementation of tree removal on FR 10 may result in periodic traffic delays on FR 10 for up to two weeks occurring on workdays during business hours.
ce	Ongoing; as needed	FR 10 south of the current and proposed South Pit Pumice Mine	FR 10 right-of-way	Road grading may occur as needed as specified in special use permits for pumice hauling.
umice	2008 or beyond	Adjacent to FR 10	36 acres	A current proposal for a new pumice mine adjacent to FR 10 to replace the current Cerro del Pino mine. Proposal is still being developed..
t Mine	Reclamation to begin in 2007	FR 270 east of FR 10	9 acres	The existing South Pit mine has completed active mining operations and would be reclaiming the 9-acre site in 2008. Reclamation would be completed using on-site mechanical equipment. Little or no traffic effects above current mine traffic are expected.
ne	Mining began in 2007 and will continue until 2009	Adjacent to FR 10, south of Boone-Duran Pumice Mine expansion	5.6 acres	The existing Cerro del Pino mine currently hauls at an average rate of 2.6 loads of pumice per day and is often halted during winter months due to icy conditions. During the fall (Sept, Oct., Nov.), up to 8 loads per day have been recorded. The Forest Service has received a request by the mine developer for a 36 acre mine expansion. No change in the current rate of loads per day is expected.
ne	To begin at the start of work on the proposed Boone-Duran Pumice Mine	Adjacent to FR 10, south of proposed Boone-Duran mine location	5 acres (previous acreage already reclaimed)	Reclamation of the Cerro del Pino pumice mine has been completed. Approval of the 36-acre expansion of the current mine will result in future reclamation activities and contribute to minor increases to traffic on FR 10 between the two mines during this period of active reclamation.
ce Activities				
	Up to two months of construction sometime between summer 2008 and 2009	North of Community of Ponderosa; adjacent to SR 290 near its junction with FR 10	N/A	Reconstruction of the dam spillway may contribute to large truck traffic on SR 290 and may result in the temporary presence of heavy machinery on the SR 290 right-of-way near its northern terminus.

t and ments	Date of Action	Area	Size *	Comments
	Currently scheduled for fall 2007	SR 4 in Jemez Springs	N/A	Trail development should not impact traffic on SR 4; drainage improvements could result in temporary road restrictions or closures
of idge	Not scheduled until 2013 according to NMDOT	South of Village of Ponderosa on SR 290	N/A	Since the repairs to this bridge are not scheduled until 2013, the impacts of traffic detours and increases in heavy machinery on SR 290 as a result of this activity should be re-evaluated prior to issuance of the second 5-year contract.

ages are approximations

est Road

te Road

: applicable

= New Mexico Department of Transportation

3.2 IMPACT TOPICS

3.2.1 Traffic

This analysis will quantify current traffic levels on FR 10 according to available data, and will discuss how Copar's operations on the existing South Pit Pumice Mine contribute to traffic levels on FRs 270C, 270, and 10, SRs 290 and 4. Traffic is quantified as the number of loads per day of pumice hauled. The primary difference between the two action alternatives is the difference in number of loads allowed per day. Traffic impacts on FR 10 and through the Village of Ponderosa on SR 290 were the primary concern raised in comments received by the Forest Service during public scoping.

3.2.1.1 Affected Environment

The Forest Service only has direct authority over roads on National Forest Lands. While hauling pumice south from the South Pit Mine to San Ysidro, FRs 10, 270, and 270C are the only roads used for which the Forest Service has direct authority to implement management stipulations or regulate use. Many comments received during scoping on this proposal requested that the Forest Service limit the speed, times of travel, or noise caused by pumice hauling on State administered roadways (especially SR 290 through the Village of Ponderosa). Though the Forest Service can regulate the time of pumice hauling on Forest Roads used to access the project location, thus affecting the use of SR 290 and other connecting state routes, the Forest Service cannot directly regulate use of pumice-hauling trucks on roads that fall under the State of New Mexico's jurisdiction.

FR 10 is an unpaved gravel and dirt road that stretches approximately 11 miles between the Village of Ponderosa north to the Community of Sierra de los Pinos. At times the road winds its way over steep slopes with switchbacks and drop-offs of several hundred feet to one side or the other. Currently, only the southern 8 miles of the road south of the existing Utility Block mine receive regular road grading by the mine operators (Utility Block and Copar) as authorized in their Special Use Permits. While the portion of FR 10 adjacent to the Paliza Campground has a posted speed limit of 10 mph, a speed limit of 25 mph can be enforced on the remainder of the road based on its engineering specifications.

There is limited data concerning vehicular use of FR 10, though it is known that its use varies drastically according to season. FR 10 receives the lightest use in the winter months when icy conditions or snow often prevent vehicular access. In years with heavy snow, a closure order is in place to prevent access from January 1 to May 15. In the spring and summer, recreational use near Paliza Group and Family Campgrounds result in substantially higher amounts of traffic on the southern 1 or 2 miles of the road and smaller increases of use throughout the length of the route. In the fall, hunters and mine operators who are stockpiling

supplies on nearby privately owned lands for use over the winter increase their use of FR 10 primarily on the southern 8 miles of the road.

In 2005, average weekday traffic volumes combined for both directions on SR 290 between SR 4 and Ponderosa was 800 (Mid-Region Council of Governments 2006). To determine vehicular use of FR 10, three infrared traffic counters were installed on December 21, 2005. Two of these traffic counters were placed on FR 10 and one was placed on FR 270 to determine vehicular use along the length of FR 10 and to delineate the contribution of traffic on FR 10 from private property owners and pumice hauling on FR 270, and from those users who only use the southern 5 to 8 miles of FR 10.

Preliminary data collected from traffic counters appear to be consistent with expected results; that traffic generally increases from December to March, that there is more vehicular use toward the entrance of FR 10 than several miles north, and that use of Forest Roads occurs for a longer part of the day as the season progresses.

Table 3.2 includes a summary of the hourly data collected from the three traffic counters. The traffic counter located at the entrance of FR 10, near the Village of Ponderosa, receives the greatest use (almost twice as much as the other counters), most likely because it is the main entrance point to Paliza Canyon and other National Forest System lands nearby. In contrast to the other counters, which are located several miles north on FR 10 and on FR 270, the traffic counter closest to Ponderosa receives much more use on weekends than on weekdays. Based on this information, we assume that the lower portion of FR 10 receives a growing amount of use by recreational users toward spring and summer. Furthermore, based on the data it can be deduced that this recreational traffic is primarily contained within the southern 5 to 8 miles of FR 10 and connecting Forest Roads.

Table 3.2. Summary of Traffic Data Collected on FR 10 and FR 270

	Dec-05	Jan-06	Feb-06	Mar-06
Lower FR 10 Counter—Placed at southern terminus of FR 10				
• Daily count average	58*	52	61	69
• Estimated vehicles/day	29	26	31	35
• Weekend count average	n/a	59	71	87
• Weekday count average	n/a	55	58	64
• Hours of greatest use	9am-3pm	8am-5pm	6am-5pm	6am-5pm
• Daily count maximum	85	92	99	102
• Daily count minimum	23	28	28	51
• Number of days counted	10	31	28	9
Mid FR 10 Counter—Placed at turn-off for current Utility Block mine on FR 10				
• Daily count average	23	19	36	33
• Estimated vehicles/day	12	10	18	17
• Weekend count average	n/a	13	14	16
• Weekday count average	n/a	27	30	41
• Hours of greatest use	7am-12pm	7am-12pm	7am-1pm	7am-1pm
• Daily count maximum	38	36	50	50
• Daily count minimum	6	3	7	10
• Number of days counted	10	31	28	9
FR 270 Counter—Placed approximately 0.5 mile east of junction with FR 10				
• Daily count average	4	3	19	39
• Estimated vehicles/day	2	2	10	20
• Weekend count average	n/a	3	1	2
• Weekday count average	n/a	5	26	50
• Hours of greatest use	10am-4pm	10am-4pm	7am-12pm	7am-12pm
• Daily count maximum	10	23	53	60
• Daily count minimum	0	0	0	0
• Number of days counted	10	31	28	9

* Counts were adjusted with the removal of daily counts that appeared unrealistic

FR 10 is one of the main Forest System Roads used by visitors to the District. It is the main route used for access to the Paliza Group and Family Campgrounds. FR 10 also provides access to two private property inholdings located off of connector roads, and can be used as a north-south alternate to State Highway 4 when traveling between the communities of Ponderosa and Sierra de los Pinos. FR 10 is considered a Level 2 Forest System Road, meaning it is a key access point for lesser used Forest System Roads, and as such receives more regular maintenance to facilitate proper road conditions.

Based on an analysis of Copar company records (haul tickets), 1,112 loads of pumice were removed from the South Pit Mine between September 2003 and August 2004. Haul trucks operated for 162 days of that year hauling an average of 6.9 truckloads per hauling day. The maximum number of loads hauled on any one day was 20, which occurred once in March. Only one load was hauled on seven separate days. During the sample year, eight loads were hauled on 35 different days, the most frequent occurrence (mode).

Table 3.3 summarizes the hauling data for the sample year. Loads hauled per month ranged from a low of six in December 2003 to a high of 187 in May 2004 and averaged 93 loads per month for the year. The number of loads hauled per month is variable, with low months occurring in September, December, February, and July. The most active months were March, April, May, and October. Although the seasonal difference in production is not very pronounced, production is reduced in late fall and winter months, likely due to winter weather, and in summer, likely due to fire restrictions.

During summer months (May, June, July, and August) when total vehicular use of FR 10 is estimated to be highest, 435 loads were hauled from the mine during 59 days of hauling—an average of 7.4 loads per haul day.

Table 3.3. Existing South Pit Pumice Mine Hauling Data Summary from September 2003 through August 2004

Month	Year	Number of Loads
September	2003	52
October	2003	136
November	2003	108
December	2003	6
January	2004	74
February	2004	46
March	2004	128
April	2004	127
May	2004	187
June	2004	118
July	2004	27
August	2004	103
Total Loads		1,112

Number of Haul Days	162
Average Loads per Haul Day	6.9
Average Loads per Calendar Day	3.0

3.2.1.2 Environmental Consequences

This section looks at the incremental impact of pumice hauling under each of the alternatives. This information is meant to inform the public of potential impacts of each alternative and to provide information for an informed decision.

Alternative 1–No Action

Under the No Action Alternative pumice hauling from the South Pit Mine would cease once reclamation has been completed on the existing 9-acre mine. It is expected that reclamation would be completed before the end of 2007. Pumice hauling on FR 10 would continue for at least the next 5 years from the ongoing mining activities at the Cerro del Pino Mine.

This alternative would result in a net average decrease of 6.9 loads per haul day on FR 10 and SR 290 (through Ponderosa). There would be no pumice hauling on FR 270 and FR 270C. Road maintenance on 1.2 miles of FR 270, and 0.7 mile of FR 270C would be discontinued once operations and reclamation on the current South Pit Pumice Mine are completed in 2007. The Forest Service would receive responsibility for continuing road maintenance on these portions of road. As a result, it is expected that road conditions would decline due to less regular maintenance activities and a greater response time after road damage as a result of storms.

Cumulative Effects

The No Action Alternative would result in no impacts to traffic, but would impact the road condition as fewer resources would be available to maintain FR10. Since this alternative results in no impacts to traffic, there would be no cumulative effects.

Alternative 2–Proposed Action

Under the Proposed Action alternative, pumice mining operations would be authorized and pumice hauling would be limited to six loads per day, only on weekdays excluding Jemez Feast Days, Memorial Day, Labor Day, and Independence Day. Additionally, to reduce traffic during the times that children are traveling to and from school, pumice hauling would be excluded between 7:30 A.M. and 8:30 A.M. and 3:00 P.M. and 4:00 P.M. on school days.

Under this alternative, limits on pumice hauling from the South Pit Mine would reduce by about one the average number of loads per haul day from the sample average (taken from September 2003 through August 2004) of 6.9 loads per haul day at the current South Pit Pumice Mine.

With the restriction on the number of loads hauled per day, the total number of loads hauled per year becomes dependent on the number of days available for hauling and is dependent on weather, fire restrictions, and other Forest closures. Pumice would not be hauled from the South Pit Pumice Mine during the time period that winter driving conditions force road closures, which is typically between January 1 and May 15; however, the duration of winter road closures is determined by the District Ranger after an assessment of road conditions is made.

The Developer could haul pumice from the South Pit Mine a maximum of 258 days a year (5 days a week minus three holidays), assuming no other road or Forest closures and no weather-related problems. However, assuming the number of days in which hauling takes place is similar to previous years, it is likely that hauling will be limited to approximately 160 days. Under this alternative, the total number of loads removed from the mine could stay the same as the current condition, increase as compared to current conditions, or decrease depending on the number of days available for hauling. To equal the total number of loads that was hauled during the 2003–2004 sample year, haul days would have to increase from 162 days to 185 days, an increase of 23 days or 14%. Since this is reasonably achievable, it is assumed that the Developer would haul about the same number of loads as the current operation, but spread over a greater number of days, resulting in fewer trips per day than is currently practiced.

Limiting hauling to weekdays and excluding holidays would minimize traffic conflicts on FR 10. The highest traffic on the road occurs during the late spring and summer months. According to data collected associated with the use of FR 10 (see Table 3.2), as seasons progress towards the summer, vehicular use on the southern portion of FR 10 becomes concentrated during the weekends. Although there would be continuing traffic conflicts with approval of this alternative, these traffic impacts would affect the minority of Forest users who visit during the weekday. Traffic conflicts would primarily occur on the lower portion of FR 10 where the road is wider, has flatter curves, and is less steep.

The round-trip mileage from the South Pit Mine to San Ysidro is approximately 50 miles. At the maximum six trips per day for an estimated 250 days per year for the 10-year operation period of the mine, an estimated 750,000 miles would be traveled during the proposed mine's operation. According to the National Highway Transportation System Administration's National Center for Statistics and Analysis, the average rate of large truck fatality accidents in 2003 was 2.19 per 100 million miles traveled. At the projected 750,000 miles, the expected maximum fatality accident rate would be 0.02 fatality accidents during the proposed mine's operation. The number of large trucks involved in injury accidents was 41 per 100 million vehicle miles traveled (National Highway Transportation System Administration 2004). Thus, at the projected 750,000 miles to be traveled through the operation of the mine, the expected maximum injury accident rate would be 0.31 injury accidents during the 10 years of the proposed mine's operation.

Traffic data collected for the SR 4 and SR 290 intersection shows a 50% increase in average weekday daily traffic between 1996 and 2005 (Mid-Region Council of Governments 2006). In addition, the portion of SR 4 between milepost (MP) 1 (intersection with SR 550) and MP 6 (just north of intersection with SR 290) was referred to as "dangerous," with 25 accidents reported for the period 1999–2004 (Mid-Region Council of Governments 2006).

Cumulative Effects

Alternative 2 would reduce the pumice mining operations contribution to cumulative traffic impacts on FR 10 because the six loads per day limit is less than the current 6.9 average loads per day. An increase in the number of haul days could result in a roughly similar amount of total truck traffic but at a lower intensity. Present and foreseeable activities occurring on FR 10 and SR 290, such as the installation of a water line on FR 10 for the Village of Ponderosa, pumice hauling from the Cerro del Pino Pumice Mine, tree removal along the southern portions of the FR 10 right-of-way, a prescribed burn by the Forest Service in Paliza Canyon and nearby areas, ongoing recreational use, the re-opening of the Paliza Group and Family Campgrounds in 2008 and dam construction on SR 290, would be the main activities contributing seasonally to cumulative traffic impacts.

Ongoing pumice hauling from the Cerro del Pino pumice mine is limited to six loads a day. Pumice from the Cerro del Pino Mine is also hauled south on FR 10 and SR 290 through Ponderosa, contributing to traffic impacts during periods when both operators are hauling at maximum rates. Cumulative impacts from pumice hauling would have the greatest impact on the traffic capacity of these roads during the summer and fall months when recreational use is highest and pumice hauling has historically been the greatest. On FR 10, increased pumice hauling could cause minor traffic delays for other users when passing pumice trucks, which often requires the other user to stop or pull to the side of the road.

Tree removal in the FR 10 right-of-way and prescribed burning in Paliza Canyon and nearby areas of the Forest would likely contribute to cumulative traffic impacts when heavy machinery is used in the fall (September through November) and early spring (February to March 15) between 2008 and 2009. Impacts from these activities would be limited to FR 10 and are not likely to result in measurable cumulative impacts on SR 290. Prescribed burning activities near FR 10 would likely result in the temporary closure of the road, preventing the operation of pumice mines in the area and thus preventing traffic impacts. Tree removal activities and prescribed fire activities in other portions near Paliza Canyon, however, may result in concentrated use of FR 10 for access by fire trucks and other heavy machinery for up to one week at a time in the early spring or fall. This would result in increased traffic on the southern portion of FR 10, which could temporarily affect recreational access to Forest areas adjacent to FR 10, FR 266, FR 271, FR 270, and FR 137.

The Paliza Group and Family Campgrounds are expected to re-open for public use after 2 years of construction during the summer and fall of 2008. Thus, recreational use of the southern portion of FR 10 (where recreational use is thought to be primarily concentrated on FR 10) is expected to substantially increase in late spring through the fall, with a maximum of traffic on FR 10 near the Paliza Group and Family Campgrounds occurring during the summer months. This increased traffic would be concentrated in the southern 3 miles of FR 10 and

would result in cumulative increases in total vehicular traffic when combined with net average increased pumice hauling under this alternative.

Since pumice hauling is limited to weekdays and excluded from holidays, cumulative traffic impacts would only affect those who use recreational facilities adjacent to FR 10 on weekdays. Since most recreational use occurs on weekends and holidays, pumice hauling combined with recreational use on the southern portion of FR 10 during the weekdays would affect a minority of Forest users through increased traffic on FR 10 and potential traffic delays as pumice trucks pass other vehicles on FR 10.

Bridge modifications on SR 290 near the southern portion of the Village of Ponderosa and dam repair adjacent to SR 290 near the northern terminus of the Village of Ponderosa would result in additional cumulative impacts to traffic on SR 290 at localized areas for short time periods. No schedule has been set for the dam repair and bridge modifications are not scheduled until 2013. Activities associated with dam repairs would result in increased traffic by heavy machinery on SR 290. Pumice hauling during dam repair on SR 290 would cumulatively increase the concentration of heavy trucks present on SR 290 during construction activities. High concentrations of heavy machinery on SR 290 and delays caused by construction would result in more noise and greater traffic along SR 290 through the Village of Ponderosa. Since the bridge modifications are not scheduled until 2013 (as per Dennis Gregory, NMDOT), the impact of this activity on the traffic and Village of Ponderosa will not be addressed in this EA but should be re-evaluated prior to issuance of a second 5-year mining contract.

The Jemez Ranger District will be completing their recommendations for road use and closure by October 30, 2007, in response to the Travel Management Rule (REF). Preliminary recommendations by the Forest Service may result in secondary road closures that will re-distribute traffic through the forest. The creation of an "all vehicle" loop travel corridor using FRs 266 and 270 will potentially increase the use of these two roads, with the closure of other previously used roads. Although labeled as "all vehicle," portions of this loop route contain unimproved roads that may only be suitable for four-wheel drive trucks. Due to this restriction, the new loop road will probably only result in minor increases in traffic on these two roads, with the most frequent use occurring primarily in the summer months.

In summary, Alternative 2 would add cumulatively to traffic impacts such as noise, temporary delays, and potential safety concerns caused by other planned projects in the area. The greatest impact would likely occur during summer weekdays when recreational use is expected to be highest and pumice hauling combined with other activities would result in regular use of FR 10 and SR 290. Additionally, pumice hauling during the fall would result in traffic impacts that would affect hunters, other projects on Forest Service lands, and other Forest users. Impacts in the fall would likely be more acute than in the summer, because

pumice mining is at its peak in the fall and those who use the Forest in the fall are more likely to be present on weekdays. Cumulative traffic impacts are most likely to be concentrated in the southern 3 miles of FR 10 where campgrounds are located, where other Forest Service projects would be implemented, and where all users access the Forest in the Paliza Canyon and nearby areas.

Alternative 2 would also add cumulatively to potential traffic safety issues at the intersection of SR 4 and SR 290 and along the portion of SR 4 to the intersection of SR 550. As addressed previously, these impacts would be most pronounced during summer and fall weekdays when recreational activity is expected to be highest and haul trucks would regularly be traveling SR 4 and SR 290. The large number of accidents on SR 4 could be a concern, particularly since the stretch between SR 290 and SR 550 already contains several reduced speed zones. However, this road was not designed to handle the excessive use by large vehicles that commonly include motor homes and campers operated by non-resident motorists not familiar with the local roads.

Additional work scheduled by NMDOT for the SR 4 corridor will result in cumulative impacts in conjunction with the proposed action (Table 3.1). Three projects that are currently listed by the Regional Transportation Planning Organization Technical Advisory Committee as priorities include the development of a multi-use trail, drainage improvements and bridge reconstruction on SR 4 in Jemez Springs; SR 4 realignment around Jemez Pueblo; and SR 4 realignment around San Ysidro Pueblo (Mid-Region Council of Government 2007).

Alternative 3–Reduced Traffic

Under the Reduced Traffic Alternative, pumice mining operations would be authorized up to four round-trips per day on weekdays excluding Memorial Day, Labor Day, and Independence Day. Additionally, to prevent impacts to schoolchildren, pumice hauling would be excluded between 7:30 A.M. and 8:30 A.M. and 3:00 P.M. and 4:00 P.M. on school days.

Under this alternative pumice hauling would decrease from the current (2003–2004) average of 6.9 loads per haul day to a maximum of 4 loads per haul day.

Under the reduced-traffic alternative, the current total number of 1,112 loads hauled per year would also decrease. With a restriction of four loads per day and a maximum of 258 days per year (5 days a week minus three holidays), Alternative 3 would yield a total of 1,032 loads per year assuming no other road or Forest closures and no weather-related problems. This is an unlikely scenario and it is likely that the total loads per year would be substantially less than the current condition.

Limiting hauling to weekdays and excluding holidays would minimize traffic conflicts on FR 10. The highest traffic on the road occurs during the summer. According to data collected on use of FR 10 (see Table 3.2), as the season progresses towards the summer, vehicular use on FR 10 becomes concentrated during the weekends and on the southern portion of FR 10. Although there would be continuing traffic conflicts with approval of this alternative, these traffic impacts would affect the minority of weekday Forest users. Traffic conflicts would primarily occur on the lower portion of FR 10 where the road is wider, has flatter curves, and is less steep.

The round-trip mileage from the South Pit Mine to San Ysidro is approximately 50 miles. At the maximum four trips per day for an estimated 250 days per year for the 10-year operation period of the mine, an estimated 500,000 miles would be traveled during the proposed mine's operation. According to the National Highway Transportation System Administration's National Center for Statistics and Analysis, the average rate of large truck fatality accidents in 2003 was 2.19 per 100 million miles traveled. At the projected 500,000 miles, the expected maximum fatality accident rate would be 0.01 fatality accidents during the proposed mine's operation. The number of large trucks involved in injury accidents was 41 per 100 million vehicle miles traveled (National Highway Transportation System Administration 2004). Thus, at the projected 500,000 miles to be traveled through the operation of the mine, the expected maximum injury accident rate would be 0.21 injury accidents during the 10 years of the proposed mine's operation.

Cumulative Effects

Cumulative effects under the Reduced Traffic Alternative would be similar to those effects discussed under the proposed action. The primary difference would be that pumice hauling under this alternative would be limited to four round trips per day rather than six, resulting in less intensive traffic (per haul day) and less annual traffic, along with related decreases in traffic noise and conflicts.

3.2.2 Wildlife

This document includes analysis of effects on the following:

- Proposed, endangered, threatened, and sensitive species
- Management indicator species
- Migratory birds
- General wildlife

3.2.2.1 Affected Environment

General Affected Habitat: The 48-acre project area is a hilly, sloped area in predominantly ponderosa pine forest. The understory is scattered ponderosa pine,

sparse grasses, and forbs. The elevation ranges from 8,300 to 8,600 feet. No permanent streams or surface water features are located in the project area; however, an ephemeral side drainage exists south of the proposed expansion area. This ephemeral drainage runs southeast to northwest into San Juan Canyon; downed wood is moderately abundant throughout the site.

Proposed, Endangered, Threatened, and Sensitive (PETS) Species

The federally listed species evaluated in this section are based on:

- the list of endangered, threatened, proposed, and candidate species maintained by the U.S. Fish and Wildlife Service (USFWS) for Sandoval County, New Mexico (USFWS 2007); and
- the federally listed threatened, endangered, and proposed species found within national forests in the USDA Forest Service Southwestern Region (USDA Forest Service 2004).

The Forest Service sensitive species evaluated in this section are based on:

- the species included in the U.S. Forest Service Region 3 Sensitive Species List (USDA Forest Service 1999).

The likelihood of occurrence of PETS, or their required habitats, within or adjacent to the South Pit Pumice Mine expansion that could be potentially affected by project activities is summarized in Table 3.4. The potential for occurrence of these special status species was evaluated based on:

- existing information on distribution and
- qualitative comparisons of the habitat requirements of each species and vegetation communities/landscape features found in the project area.

Species that have the potential to be affected by actions associated with this project are listed in **bold** type in Table 3.4. Effects on these species are detailed later in this chapter.

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Birds				
Northern goshawk (<i>Accipiter gentilis</i>)	SOC	S	Coniferous, deciduous, and mixed forests including ponderosa pine, mixed species, and spruce-fir	Occurrence possible; potentially suitable roosting and foraging habitat at the project location
American peregrine falcon (<i>Falco peregrinus anatum</i>)	SOC	S	Bare rock/talus/scree, cliff, shrubland/chaparral, urban, conifer woodland, hardwood woodland, mixed woodland	Occurrence possible; no designated suitable breeding habitat; potentially suitable intermittent foraging at the project location
Bald eagle (<i>Haliaeetus leucocephalus</i>)		S	Cliff, conifer forest, hardwood forest, mixed woodland, conifer woodland, hardwood woodland with standing snag/hollow tree	Occurrence possible; potentially suitable transient roosting habitat during migration
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	T	T	Cliff, conifer forest, hardwood forest, mixed forest with standing snag/hollow tree	Occurrence possible; potentially suitable foraging habitat at the project location
White-tailed ptarmigan (<i>Lagopus leucurus</i>)		S	Rocky alpine slopes and high meadows	Occurrence unlikely; no suitable habitat at the project location
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	C	S	Riparian, hardwood forest, mixed forest, old-field, shrubland/chaparral, suburban/orchard, hardwood woodland, mixed woodland	Occurrence unlikely; no suitable habitat at the project location
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)	SOC	S	Semi-arid grasslands and prairies, often associated with prairie dog towns or mammal burrows	Occurrence unlikely; no suitable habitat at the project location
Boreal owl (<i>Aegolius funereus</i>)		S	Dense northern forests and muskeg	Occurrence unlikely; no suitable habitat at the project location
Gray vireo (<i>Vireo vicinior</i>)		S	Desert, shrubland/chaparral, conifer woodland, hardwood woodland, mixed woodland	Occurrence unlikely; no suitable habitat at the project location

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area, continued

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Birds, continued				
Baird's sparrow (<i>Ammodramus bairdii</i>)	SOC	S	Grassland, ungrazed or lightly grazed mixed-grass prairie, wet meadows	Occurrence unlikely; no suitable habitat at the project location
Mountain plover (<i>Charadrius montanus</i>)	SOC		Shortgrass prairie, xeric shrub, and fallow fields, typically on prairie dog colonies	Occurrence unlikely; no suitable habitat at the project location
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E		Forested wetland, riparian, old field, shrubland/chaparral, hardwood woodland, mixed woodland with thickets and scrubby/brushy areas	Occurrence unlikely; no suitable habitat at the project location
Whooping crane (<i>Grus americana</i>)	E		Herbaceous wetland, riparian, cropland/hedgerow, grassland, lagoon, tidal flat/shore	Occurrence unlikely; no suitable habitat at the project location
Mammals				
Cinereus (masked) shrew (<i>Sorex cinereus cinereus</i>)		S	Confined to the Sangre de Cristo, Jemez, and San Juan mountains, where the animals seem to be restricted to hydrosere communities, usually above 9,500 feet	Occurrence unlikely; no suitable habitat at the project location
Southern red-backed vole (<i>Clethrionomys gapperi</i>)		S	Cool, mesic sites within high-elevation spruce-fir forests	Occurrence unlikely; no suitable habitat at the project location
Western heather vole (<i>Phenacomys intermedius intermedius</i>)		S	Open coniferous forests with an understory of heaths or areas of shrubby vegetation on forest borders or in meadows	Occurrence unlikely; no known occurrence in the Jemez Mountains
Long-tailed vole (<i>Microtus longicaudus</i>)		S	Mixed forest on sheltered slopes and in riparian spruce, willow, and alder communities	Occurrence unlikely; no suitable habitat at the project location
New Mexico meadow jumping mouse (<i>Zapus hudsonius luteus</i>)	SOC	S	Herbaceous wetland, moist lowland habitats, riparian, old field	Occurrence unlikely; no suitable habitat at the project location

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area, continued

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Mammals, continued				
Red fox (<i>Vulpes vulpes</i>)		S	Mixed shrub, sagebrush, piñon/juniper, juniper, open woodlands, riparian areas, and agriculture habitats	Occurrence unlikely; no known occurrence in the Jemez Mountains
American marten (<i>Martes americana origenes</i>)		S	Spruce-fir forest	Occurrence unlikely; no suitable habitat at the project location
Ermine (<i>Mustela erminea murices</i>)		S	Forest-edge or successional habitats and includes grassland and shrub, wet meadows, riparian woodlands, and rocky areas	Occurrence unlikely; no suitable habitat at the project location
Mink (<i>Mustela vison energumenos</i>)		S	Obligate riparian animals found near permanent streams, wetlands, or other surfacewater	Occurrence unlikely; no suitable habitat at the project location
Southwestern river otter (<i>Lontra canadensis sonorae</i>)	SOC	S	Permanent flowing water or ponds, overhanging bank vegetation, and haul-out sites suitable for leaving and entering water	Occurrence unlikely; no suitable habitat at the project location
Rocky Mountain bighorn sheep (<i>Ovis canadensis canadensis</i>)		S	Rugged cliffs and crags or other extremely rocky areas adjacent to suitable feeding sites, which include grass as well as browse plants	Occurrence unlikely; no suitable habitat at the project location
Dwarf shrew (<i>Sorex nanus</i>)		S	Talus and other rocky areas primarily in subalpine coniferous forest	Occurrence unlikely; no suitable habitat at the project location
Water shrew (<i>Sorex palustris navigator</i>)		S	Associated with water and dense streamside vegetation in subalpine coniferous forest	Occurrence unlikely; no suitable habitat at the project location
Preble's shrew (<i>Sorex preblei</i>)		S	Shrub-grasslands or sites dominated by sagebrush (<i>Artemisia</i> spp.), including openings in coniferous forests	Occurrence possible; potential suitable habitat at the project location
Spotted bat (<i>Euderma maculatum</i>)		S	Herbaceous wetland, riparian, bare rock/talus/ scree, cliff, desert, grassland, shrubland/ chaparral, conifer woodland	Occurrence possible; potential suitable habitat at the project location

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area, continued

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Mammals, continued				
Pale Townsend's big-eared bat (<i>Corynorhinus townsendii pallescens</i>)	SOC	S	Caves and rocky outcroppings in scrub deserts, piñon-juniper woodlands, and coniferous forests	Occurrence possible; potential suitable habitat at the project location
Goat Peak pika (<i>Ochotona princeps nigrescens</i>)	SOC	S	Steep, rocky banks and hillsides in alpine and subalpine habitats	Occurrence unlikely; no suitable habitat at the project location
Pika (<i>Ochotona princeps</i>)		S	Talus slides and boulder fields in alpine and sub-alpine areas	Occurrence unlikely; no suitable habitat at the project location
Snowshoe hare (<i>Lepus americanus</i>)		S	Subalpine coniferous habitats	Occurrence unlikely; no suitable habitat at the project location
Yellow-bellied marmot (<i>Marmota flaviventris</i>)		S	Meadows in the spruce-fir forest from approximately 11,000 feet to rock slides and boulder piles well above timberline	Occurrence unlikely; no suitable habitat at the project location
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)		S	Shortgrass and midgrass prairies and grass-shrub habitats	Occurrence unlikely; no suitable habitat at the project location
Botta's pocket gopher (<i>Thomomys bottae aureus</i>)		S	The species inhabits nearly every habitat within the state so long as sufficient tuberous roots and plant material are available and soil is suitable for digging tunnels	Occurrence possible; potential suitable habitat at the project location
New Mexico banner-tailed kangaroo rat (<i>Dipodomys spectabilis baileyi</i>)		S	Inhabits well-developed grasslands, seeming to prefer heavier soils and to avoid basins where basal cover of grass is low	Occurrence unlikely; no suitable habitat at the project location
Black footed ferret (<i>Mustela nigripes</i>)	E		Grasslands/herbaceous, burrows, open habitat used by prairie dogs	Occurrence unlikely; no suitable habitat at the project location

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area, continued

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Fish				
Rio Grande chub (<i>Gila pandora</i>)		S	Coolwater reaches of the Rio Grande and Pecos River (and tributaries) in northern New Mexico	No habitat present
Rio Grande cutthroat trout (<i>Oncorhynchus clarki virginalis</i>)	SOC	S	Cool, high-gradient, high-elevation streams	Occurrence unlikely; no suitable habitat at the project location
Rio Grande silvery minnow (<i>Hybognathus amarus</i>)	E	E	Big- to medium-sized rivers	Occurrence unlikely; no suitable habitat at the project location
Pecos bluntnose shiner (<i>Notropis simus pecosensis</i>)	T	T	Medium-sized rivers with moderate gradients; also found in pools, riffle complexes, and spring brooks	Occurrence unlikely; no suitable habitat at the project location
Rio Grande sucker (<i>Catostomus plebeius</i>)	SOC	S	Cool, mid-elevation streams with rocky substrates	Occurrence unlikely; no suitable habitat at the project location
Amphibians				
Jemez Mountains salamander (<i>Plethodon neomexicanus</i>)	SOC	S	Shady, wooded montane litter	Occurrence unlikely; nearest occupied stands are approximately 1.9 miles away
Northern leopard frog (<i>Rana pipiens</i>)		S	Aquatic habitats, including marshes, streams, ponds, irrigation ditches, wet meadows, and shallow portions of reservoirs	Occurrence unlikely; no suitable habitat at the project location
Clams				
Lilljeborg's pew-clam (<i>Disidium lilljeborg</i>)		S	Found only in Nambe Lake, Santa Fe County	Occurrence unlikely; no known occurrence in the Jemez Mountains
Insects				
New Mexico silverspot butterfly (<i>Speyeria nokomis nitocris</i>)	SOC		Moist meadows, seeps, marshes, or streams	Occurrence unlikely; no suitable habitat at the project location

Table 3.4. Potential for Occurrence of PETS Species in the South Pit Pumice Mine Expansion Area, continued

Common Name (Scientific Name)	Status		General Habitat	Likelihood of Occurrence in Project Area
	USFWS	USFS		
Plants				
Springer's blazingstar (<i>Mentzelia springeri</i>)	SOC	S	Volcanic pumice and unconsolidated pyroclastic ash in piñon-juniper woodland and lower montane coniferous forest	Occurrence possible; suitable habitat within the project location
Holy ghost ipomopsis (<i>Ipomopsis sancti-spiritus</i>)	E	S	Relatively dry, steep, west- to southwest-facing slopes in open ponderosa pine or mixed conifer forest	Occurrence unlikely; found in only one canyon in the upper Pecos River drainage of the southern Sangre de Cristo Mountains
Tufted sand verbena (<i>Abronia bigelovii</i>)		S	Hills and ridges of gypsum in the Todilto Formation, 1,750–2,250 meters (5,700–7,400 feet)	Occurrence unlikely; no suitable habitat at project location
Greene milkweed (<i>Asclepias uncialis uncialis</i>)		S	Stable climax or near climax plains grasslands communities	Occurrence unlikely; no suitable habitat at project location
Chaco milkvetch (<i>Astragalus micromerius</i>)		S	Sandstone outcrops blended with Todilto gypsum or limestone	Occurrence unlikely; no suitable habitat at project location
Pecos mariposa lily (<i>Calochortus gunnisonii</i> var. <i>perpulcher</i>)		S	Meadows and aspen glades in upper montane coniferous forest	Occurrence unlikely; no suitable habitat at project location
Yellow lady's slipper (<i>Cypripedium parviflorum</i> var. <i>pubescens</i>)		S	Moist grasslands to coniferous bogs in acidic soils	Occurrence unlikely; no suitable habitat at project location
Robust larkspur (<i>Delphinium robustum</i>)	SOC	S	Canyon bottoms and aspen groves in lower and upper montane coniferous forest	Occurrence unlikely; no suitable habitat at project location
Pecos fleabane (<i>Erigeron subglaber</i>)	SOC	S	Rocky, open meadows in subalpine coniferous forest	Occurrence unlikely; no suitable habitat at project location
Wood lily (<i>Lilium philadelphicum</i>)		S	Wetland obligate commonly found with other wetland graminoids and forbs	Occurrence unlikely; no suitable habitat at project location
Chama blazing star (<i>Mentzelia conspicua</i>)	SOC	S	Road cuts and barren hillsides, on gray to red shales and clays of the Mancos and Chinle formations in piñon-juniper woodland	Occurrence unlikely; no suitable habitat at project location

USFWS = U.S. Fish and Wildlife Service

USFS = U.S. Forest Service

SOC = Species of Concern

T = Threatened

E = Endangered

S = Sensitive

C = Candidate

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

Mexican Spotted Owl (*Strix occidentalis lucida*)

The Mexican spotted owl (MSO) was listed as threatened in 1993 by the USFWS, primarily due to destruction and modification of habitat caused by timber harvest and fires, increased predation associated with habitat fragmentation, and lack of adequate protection (FR 1993). Its range extends from the southern Rocky Mountains in Colorado and the Colorado Plateau in southern Utah, southward through Arizona and New Mexico and, discontinuously, through the Sierra Madre Occidental and Oriental to the mountains at the southern end of the Mexican Plateau (FR 1993).

The MSO is not uniformly distributed throughout its range, but instead occurs in disjunct localities that correspond to isolated mountain systems and canyons (USFWS 1995). The MSO Recovery Plan (USFWS 1995) divides the MSO range into six Recovery Units (RUs). The Santa Fe National Forest occurs in the Southern Rocky Mountains-New Mexico RU, which has a small portion of the known owl sites throughout its range (USDA Forest Service 2004). MSO use a variety of habitats, but are typically associated with multi-canopied stands of mature mixed-conifer and ponderosa pine-Gambel oak forests. In the Jemez Mountains, most nests are on cliff ledges or cavities in steep-walled canyons. MSO consume a variety of prey, but commonly eat small- and medium-sized rodents such as woodrats, peromyscid mice, and microtine voles. MSO also consume bats, birds, reptiles, and arthropods. MSO typically hunt at night, locating prey from an elevated perch by sight or sound, then pouncing and capturing the prey with their talons (USFWS 1995).

Affected Habitat

The project site is located about 2.2 miles from the northeastern boundary of the San Juan Protected Activity Center (PAC) #100362 and approximately 2.5 miles from the suspected nest area within that PAC. The project site is a moderately sloping ponderosa pine forest void of any riparian zones and, therefore, is not located within restricted habitat. Although the project site contains no breeding habitat, it is considered potential MSO foraging habitat.

Mexican Spotted Owl Critical Habitat

The South Pit Pumice Mine expansion project area is located approximately 4.8 miles from the nearest designated Critical Habitat for the MSO. Activities associated with pumice mining at the project site will have no effect on MSO Critical Habitat.

SOUTHWESTERN REGION SENSITIVE SPECIES

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle was listed as endangered in 1987 by the USFWS, but was reclassified as threatened in 1995 (USFWS 1987; Federal Register [FR] 1995) and de-listed in August 2007 ([FR] 72:130 2007). Bald eagles are primarily associated with habitats near open water, and in New Mexico, bald eagles commonly winter adjacent to rivers and lakes or where waterfowl, fish, or carrion are available (New Mexico Department of Game and Fish [NMDGF] 2007a). Bald eagles are uncommon during the summer and have limited breeding sites in New Mexico, with documented nests in the extreme northern and western portions of the state (NMDGF 2007a).

Within U.S. Forest Service Region 3, bald eagles nest on the Tonto, Coconino, Prescott, and Apache-Sitgreaves National Forests in Arizona, and they winter throughout all 11 national forests in the region. The location and abundance of wintering eagles depends on food and the availability of appropriate roosting and foraging habitat, which can change year to year. In winter, the greatest number of eagles can be found along rivers and lakes; however, they can frequently be found in uplands where they prey on a variety of species, including prairie dogs (USDA Forest Service 2004, pp. 152-156).

Affected Habitat

There are no records of occurrence within or near the proposed project site. In addition, no large bodies of water are available for breeding/foraging habitat within or near the project site, and past records note that bald eagle occurrence is uncommon on the District. The Jemez Mountains do not contain known breeding habitat, although bald eagles have been observed during the winter at various sites within the District. Recent observations include winter sightings along FR 376, Fenton Lake State Park, the Valles Caldera National Preserve, and within the Jemez River valley (USDA Forest Service 2006). Wintering bald eagles near the Jemez Mountains are known to use Cochiti Lake (>15 miles from the project site) and the upper Chama River (>35 miles from the project site) for foraging. Migrating/wintering eagles could pass through and roost within the project area, but it would be on a transient basis. The project site does not drain into identified bald eagle nesting habitat.

Northern Goshawk (*Accipiter gentilis*)

The northern goshawk is recognized as a species of concern (SOC) by the USFWS and is listed as a sensitive species by Region 3 of the Forest Service (USDA Forest Service 1999). The sensitive species designation was recommended because of its vulnerability to disturbance, its dependence on large stands of old growth forest, and the potential for fragmentation of northern goshawk habitat associated with timber harvesting (Finch 1992). This species reaches the southern limits of its nearctic breeding range in the highlands of

Arizona, New Mexico, and possibly western Texas southward to at least Jalisco, Mexico (Wauer 1973). The small New Mexico population occurs locally in mature, closed-canopy coniferous forests of mountains and high mesas (Department of Defense 2006). In addition, the species has been documented as occurring in the Jemez Mountains during the breeding season (Hubbard 1992).

The northern goshawk is a powerful hunter capable of killing a variety of prey, including squirrels, hares, grouse, corvids, woodpeckers, and large passerines such as American robins (*Turdus migratorius*) (Squires and Reynolds 1997). The principal forest types occupied by the northern goshawk in the Southwest are ponderosa pine, mixed-species, and spruce-fir. In these areas, the presence of snags, downed logs, woody debris, openings, large trees, herbaceous and shrubby understories, and interspersed vegetation structure are important features contributing to the viability of prey populations (NMDGF 2007b).

Affected Habitat

The project area is located between two northern goshawk post-fledgling family areas (PFAs), approximately 0.3 mile from the boundary of the PFA to the west of the project area and 0.5 mile from the PFA to the northeast. A complete survey of the project area was conducted over two days in July 2007 and two days in August 2007 to determine the presence of goshawks in the project area. One adult and one juvenile goshawk were observed during the August surveys at the western periphery of the 0.5-mile buffer surrounding the project area. The project area is located on a moderately sloping hillside dominated primarily by ponderosa pine and is not considered high quality breeding habitat, but could be used for roosting and foraging. Existing Vegetative Structure Stages (VSS) within the 6,000-acre foraging habitat around the project area were analyzed using aerial photograph interpretation. This analysis revealed that approximately 2.1% of the 6,000-acre northern goshawk foraging area (124 acres) is VSS1, while the rest of the foraging area, including the proposed pumice mine expansion site, is estimated to be VSS3/VSS4. The various VSS for the project area are described in more detail in Section 3.2.2.2–Northern Goshawk.

Peregrine Falcon (*Falco peregrinus anatum*)

The peregrine falcon was listed as an endangered species in 1970 after numbers of falcons had been reduced to a few hundred pairs in the western United States and Mexico (NMDGF 2007c). Following restrictions on the use of organochlorine pesticides in the United States and Canada, and following implementation of successful management activities, the peregrine falcon was removed from the Federal Endangered species list in August 1999 (FR 1999). In New Mexico, breeding habitat is provided locally by cliffs in forested habitats in mountain and river canyons statewide (Skaggs et al. cited in NMDGF 2006). Most peregrine falcon prey is captured during flight, but prey may also be taken from the surface of water or ground. Prey species are primarily birds, from passerines to small

geese. Occasionally, the species preys on mammals, but it rarely preys on amphibians, fish, or insects (White et al. 2002).

Affected Habitat

The project site is not within a designated suitable breeding habitat zone for the peregrine falcon, and no suitable breeding cliffs are located within close proximity. The project area is approximately 2.1 miles from the nearest designated suitable breeding habitat, which is located to the southwest. However, the project site could be used for transient foraging. The proposed route for hauling pumice bisects designated suitable breeding habitat on FR 10 south of the project site.

Preble's Shrew (*Sorex preblei*)

The Preble's shrew is a USFWS SOC and a USFS Region 3 sensitive species. A population of Preble's shrew has been documented in the Jemez Mountains of Sandoval County, located in an open, park-like stand of ponderosa pine and Gambel oak, grass, and forb understory on a southwestern-facing 40-degree slope (Kirkland and Findley 1996; Long and Hoffman 1992). Fossils of the species have been located in Late Pleistocene-age Dry Cave in Eddy County and U-Bar Cave in Hidalgo County (Cornely et al. 1992). These shrews occur in arid or semi-arid shrub-grass associations, in openings in coniferous forest where sagebrush grows, and in wet areas such as steam banks, marshes, and wet meadows (Jackson 1922 cited in Smithsonian Institute 2007).

Affected Habitat

No known occurrences of Preble's shrew have been documented at the project site; however, occurrence has been documented in similar habitat conditions approximately 4 miles to the northeast of the project site (NMDGF 2007d). Because so little is known about the Preble's shrew general habitat associations in New Mexico, it is assumed that habitat within the project area is suitable.

Spotted Bat (*Euderma maculatum*)

The spotted bat was listed as endangered by the NMDGF in January 1988 (NMDGF 1998), but it is currently listed as threatened in the state (NMDGF 2007e). In addition, the spotted bat is a USFS Region 3 sensitive species (USDA Forest Service 1999). The species is widely distributed, but rarely observed across western North America, occurring in localized populations from central California and southern British Columbia, and southward through the Big Bend region of Texas to central Mexico (Fenton et al. 1987). In New Mexico, spotted bats are known from numerous localities, including the Jemez Mountains (NMDGF 2006). The species has been recorded in a variety of habitats in New Mexico, where it has been documented in piñon-juniper woodlands, and ponderosa pine

and spruce-fir forests (Findley et al. 1975), between the elevations of 3,900 feet and 10,600 feet (NMDGF 2006). Captured spotted bats in the Jemez Mountains were netted over streams or water holes in ponderosa or mixed-conifer forests (Findley et al. 1975). Cliff faces and rock crevices are used for roosting, and such rocky areas are an essential habitat component for the species (Easterla 1973). Moths appear to be the principal food source of the spotted bat (NMDGF 2006).

Affected Habitat

Potential spotted bat habitat, particularly ponderosa pine forest, occurs throughout and adjacent to the project area, and thus it may be assumed that the spotted bat is present or uses the site. However, roost sites, particularly rocky cliffs and crevices are void throughout and immediately adjacent to the project area. An unnamed creek (tributary to Vallecito Creek) is located directly south of the southern project area boundary and provides potential access to a water source.

Pale Townsend's Big-eared Bat (*Corynorhinus townsendii pallescens*)

The nocturnal pale Townsend's big-eared bat is listed as a USFWS SOC (FR 1994) and as a USFS Region 3 sensitive species (USDA Forest Service 1999). The species is found throughout western Canada and the western United States to southern Mexico (Harvey et al. 1999). The closest documented occurrence to the project site is on Los Alamos National Laboratory lands (Hinojosa 1998; NMDGF 2007f). Specimens collected in New Mexico have come from caves, rock shelters, or mines from low, arid desert situations, in the Sierra Rica and Tres Hermanas along the Mexican border, to Canadian Zone conditions, as in Embudo Cave in the fir zone of the Sandia Mountains (Findley et al. 1975). The species occurs as the only New Mexican bat that may regularly be found throughout the winter (Findley et al. 1975), where the bats hibernate in clusters of a few to more than 100 individuals (Harvey et al. 1999). Pale Townsend's big-eared bats are primarily considered a cave-dwelling species, but also roost in man-made cave analogues, especially old mine workings or mostly abandoned buildings with cave-like attics. Although rarely documented, reproductive females have also been observed to temporarily use mature tree cavities for roosting (NMDGF 2007f). Pale Townsend's big-eared bat diets primarily consist of moths (Harvey et al. 1999), for which they forage at tree height or less (NMDGF 2007f). Burford and Lacki (1998) indicated that more than 75% of the moths eaten by the species are dependent on forest plants.

Affected Habitat

The project area could be used during nocturnal foraging by the pale Townsend's big-eared bat, and thus it is assumed that the species has the potential to use the site. In addition, pale Townsend's big-eared bats could potentially have maternity or day roosts in trees located within the project area; however, no suitable hibernaculum occurs.

Botta's Pocket Gopher (*Thomomys bottae aureus*)

Botta's pocket gopher is a USFS Region 3 sensitive species (USDA Forest Service 1999). While the species has not been documented within the Jemez Mountains, its occurrence has been documented within Sandoval County and Santa Fe National Forest-administered lands within the Sangre de Cristo Mountains (NMDGF 2007g). Very little is known about the general habitat associations of this subspecies, but the species itself has been documented in almost every available habitat type where sufficient tuberous roots and plant material are available for forage and soil conditions are suitable for digging tunnels, from almost sea level to 11,000 feet in Arizona (NMDGF 2007g).

Affected Habitat

No known occurrences of Botta's pocket gopher have been documented within the Jemez Mountains to date (NMDGF 2007g); however, because the species has been documented in habitat associations and elevations similar to those present at the project location in surrounding mountain ranges in New Mexico and Arizona, it is assumed that habitat within the project area is suitable.

Springer's Blazingstar (*Mentzelia springeri*)

Springer's blazingstar is listed as a USFS sensitive species (USDA Forest Service 1999). The species is known to occur in the Jemez Mountains in volcanic pumice and unconsolidated pyroclastic ash in piñon-juniper woodland and lower montane coniferous forest at an elevation ranging from 7,000 feet to 8,000 feet (2,150–2,450 meters). The bushy, yellow-flowered species is narrowly endemic to the loose volcanic substrates of the Jemez Mountains and is often seen in areas of disturbance, such as where roads are cut through pumice (New Mexico Rare Plant Technical Council 1999).

Affected Habitat

Because of the nature of the substrate (pumice) and the elevation of the project area, it is assumed that the species has the potential to occur.

MANAGEMENT INDICATOR SPECIES

A review of Management Indicator Species (MIS) for the Santa Fe National Forest (USDA Forest Service 1995) indicates the following MIS have potential to occur at the project area: **Merriam's turkey, hairy woodpecker, mourning dove, Mexican spotted owl, and elk**. The project site contains no habitat for the piñon jay, Rio Grande cutthroat trout, or Rocky Mountain bighorn sheep. The Mexican spotted owl is discussed in more detail in the Federally Listed Threatened and Endangered Species section and is only discussed briefly in this section. The Santa Fe National Forest Management Indicator Species Assessment:

May 2006 Update (Britton and Ferrell 2006) contains more detailed habitat information and population trends for each species.

Merriam's Turkey (*Meleagris gallopavo*)

Merriam's turkey is found from southern Canada south through the 48 contiguous states and along the Sierras to central Mexico (Eaton 1992), and is found in many mountainous areas of New Mexico. The species uses a wide range of vegetative communities throughout the Santa Fe National Forest, but it was selected as an MIS to serve as an indicator of healthy, mature ponderosa pine habitat (Britton and Ferrell 2006). Wild turkey habitat in the western United States has three main components: water, roost sites, and summer/brood rearing areas. Whereas the wild turkey has been found to be resilient and highly adaptable to a variety of habitats, these features are essential for maintaining viable populations (Kamees 2002). Nest sites are normally located within 0.5 mile of a permanent water feature. Roost sites are comprised of tall trees with layered, widely spaced, horizontal branches. The trees also provide food, escape, and resting cover. Turkeys prefer mesic (moderately moist) summer and brood habitat that is relatively open with a variety of grasses and forbs present. This vegetation provides a source of food in the form of seeds, and insects for developing poult (Kamees 2002).

In the Santa Fe National Forest, ponderosa pine is an essential component of Merriam's turkey's permanent habitat, and is utilized as a source of mast and roosting. The species roosts in tall mature or over-mature ponderosa pines with relatively open crowns and large horizontal branches starting at 20–30 feet off of the ground; trees with a 14-inch diameter at breast height (dbh) are often used (Britton and Ferrell 2006). Turkeys forage in grasslands, brush communities, deciduous tree-brush, and in ponderosa pine. They eat grasses and grasshoppers in the summer, and oak mast, piñon nuts, and mature ponderosa pine seeds in the fall. During winter snowfall accumulation, tall grasses are used as forage.

The Santa Fe National Forest as a whole contains approximately 1.3 million acres of suitable turkey habitat, and is remaining relatively stable (Britton and Ferrell 2006). The population trend for the Merriam's turkey is ranked as stable to slightly increasing on the Santa Fe National Forest level (Britton and Ferrell 2006).

Affected Habitat

Merriam's turkey roosting and foraging habitat occurs throughout and adjacent to the project area, and thus it may be assumed that the species is present or utilizes this site. However, nesting habitat for the species will not be affected by the proposed expansion of the South Pit Pumice Mine.

Hairy Woodpecker (*Picoides villosus*)

The hairy woodpecker resides in the forests of North and Central America from near the northern limit of boreal forest in Canada and central Alaska, south to western Panama and northern Baja California, and east to the northern Bahamas, and is the most widespread species of the genus *Picoides* (Jackson et al. 2002). Locally, the species is a forest generalist, keying in on available snags, downed logs, and live aspen (Britton and Ferrell 2006). Live trees and snags in open woodlands are preferred nesting sites of hairy woodpeckers, where the bird makes a nest entrance that exactly fits its head and body size (1.6 to 1.8 inches) (Scott et al. 1977). Nest heights vary from 15 to 45 feet, but are commonly 35 feet high and are found in trees with a 15-inch or more dbh (Scott et al. 1977). Hairy woodpeckers prefer to feed on insects on dead or diseased trees, with approximately 80% of their diet made of animal matter (e.g., larval and adult beetles, ants, and caterpillars) (Reynolds et al. 1992). Their insectivorous diet is typically associated with snags and downed logs; these features are key components of hairy woodpecker habitat (Britton and Ferrell 2006).

There are approximately 1.06 million acres of vegetative communities throughout the Santa Fe National Forest that comprise potential hairy woodpecker habitat, and the species population trend is considered stable to increasing in the Santa Fe National Forest (Britton and Ferrell 2006).

Affected Habitat

It can be assumed that the 48-acre project area is used for nesting/roosting/foraging by the hairy woodpecker. Based on the habitat available, hairy woodpeckers would be expected to be common in this area.

Mourning Dove (*Zenaida macroura*)

The mourning dove is found across North America in a variety of habitats, including most grassland and forest types. It is common to abundant in most New Mexico counties (NMDGF 2007h), and is among the most abundant and widespread terrestrial birds endemic to North and Middle America (Mirarchi and Baskett 1994). Mourning doves display tremendous adaptability in breeding habitat selection. Generally, it shuns deep woods or extensive forests and selects more open woodlands and edges between forest and prairie biomes for nesting (Mirarchi and Baskett 1994). In all situations, abundant food and water must be available within 20–30 kilometers. The species feeds almost entirely on the ground, where seeds are the primary food source (Mirarchi and Baskett 1994; Reynolds et al. 1992).

There are approximately 836,000 acres of vegetative communities represented by the mourning dove throughout the Santa Fe National Forest, and the habitat trend is stable to increasing throughout the entire Forest (Britton and Ferrell 2006). The

population trend in the Santa Fe National Forest is ranked as stable based on the statewide trend and Breeding Bird Survey (BBS) data in and adjacent to the Forest (Britton and Ferrell 2006).

Affected Habitat

The 48-acre project area provides habitat for the mourning dove. Mourning doves have been recorded during various bird surveys in the Jemez District (Fair 2002, 2004; Dickson 2002; USDA Forest Service 2003) and would be expected to use this area.

Mexican Spotted Owl (*Strix occidentalis lucida*)

Approximately 436,000 acres of mixed conifer and coniferous riparian habitat are available across the Santa Fe National Forest as suitable habitat for the MSO. The habitat trend in the Forest has been slightly declining since the implementation of the Forest Plan (Britton and Ferrell 2006). The population trend for the MSO is rated as stable in the Santa Fe National Forest (Britton and Ferrell 2006).

Rocky Mountain Elk (*Cervus elaphus nelsoni*)

Rocky Mountain elk inhabit most forest types with good forage and cover. Elk observed on the east slope of the Jemez Mountains are most commonly associated with shrub-grass mixtures and piñon-juniper woodlands (combined, approximately 65% of records) (NMDGF 2007i). However, elk utilize a variety of habitat types during the course of their lives and appear to be extremely adaptable to both secondary successional and specific successional vegetation types.

There are over 1.3 million acres of habitat types available across the Santa Fe National Forest as suitable habitat for the Rocky Mountain elk. The habitat trend is rated as stable in the Santa Fe National Forest, while the population trend is ranked as increasing (Britton and Ferrell 2006).

Affected Habitat

The 48-acre project area provides limited foraging habitat. Use of the project area would be considered transient because of the sparse nature of the grass and forb vegetation communities available for foraging.

MIGRATORY BIRDS

Migratory birds are protected by the Migratory Birds Treaty Act (16 U.S.C. 703-711), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), and Executive Order 13186–Responsibilities of Federal Agencies to Protect Migratory Birds.

The Forest Service, Southwestern Region, currently analyzes effects (impacts) in the following manner:

- Effects to SOCs listed by the New Mexico Partners in Flight (NMPIF) (2007);
- Effects to Important Bird Areas; and
- Effects to important overwintering areas.

NMPIF considers the following factors in identifying conservation priority species: global abundance, New Mexico breeding abundance, global breeding distribution, threats to breeding in New Mexico, importance of New Mexico to breeding, global winter distribution, and threats on wintering grounds. Species with the highest risk factors are classified as "highest priority" for conservation action. This evaluation addresses general effects to migratory birds, and specific effects to highest priority species for the main habitat types found in the project area.

Impacts to Partners in Flight priority birds: The priority bird populations and habitats established by NMPIF for the ponderosa pine habitat present in the project areas include (NMPIF 2007):

- flammulated owl (*Otus flammeolus*), Virginia's warbler (*Vermivora virginiae*), Grace's warbler (*Dendroica graciae*), greater pewee (*Contopus pertinax*), and olive warbler (*Peucedramus taeniatus*). The greater pewee and olive warbler do not occur in northern New Mexico.

GENERAL WILDLIFE

Based on the elevation, forest type, and topography, the general wildlife species expected to occur within the allotments include (among many others) mule deer, elk, coyotes, mountain lion, bear, bobcats, squirrels, bats, other small rodents, reptiles, and a variety of birds including turkey, hawks, owls, and songbirds.

Affected Habitat

Because of the small size of this project area and the lack of permanent water, it would be expected that this site would not provide high quality breeding habitat, but would be used by most wildlife species for roosting and foraging.

3.2.2.2 Environmental Consequences

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

Mexican Spotted Owl

Alternative 1 (No Action) would have no effect on the MSO. There would be no removal of trees on the project site, thus no disturbance associated with clearing the 48 acres. There would be no long-term impacts of noise and activities associated with mining pumice in this area. The foraging site would remain available for MSO use without disturbance.

Alternative 2 (Proposed Action) may affect, but is not likely to adversely affect, the MSO. There would be no impacts associated with the proposed pumice mine expansion on breeding habitat; however, foraging habitat may be affected by project activities. While there would be noise and activity disturbances, all activities associated with clearing the land and pumice mining would occur during the day. Therefore, the project site and adjacent forest would be undisturbed for nocturnal foraging by the MSO. Pumice hauling would occur during the day when MSO would not be foraging, but early morning or late afternoon/evening hauling runs would have potential to impact owls that could be crossing or foraging near FR 10, FR 270, and FR 270C. This would be the same effect as current use because no increase in hauling is proposed.

Clearing of the land would require the removal of trees and topsoil within the project site (trees would be stockpiled around the edge of the mine site for use during reclamation), leaving exposed pumice soil. Open mining areas would be limited to 16 acres at one time. This exposed land surface would be unsuitable habitat for most MSO prey species during the period of active mining. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. It can be assumed that between 1 to 25 acres would be unsuitable for MSO prey and foraging at any one

time throughout the 10-year duration of the project. Suitable re-vegetation capable of supporting a viable prey population can be expected to take several years following the completion of reclamation. The area of foraging habitat impacted should not affect the ability of MSO to find prey within the region. Following reclamation, the affected area is expected to remain in an open, grassy state for many years before beginning to be reclaimed again by forest. This open, grassy area would provide a diversity of prey habitat within the adjacent forested area for the MSO.

Alternative 3 (Reduced Traffic) may affect, but is not likely to adversely affect, the MSO. Effects would be the same as those described in the Proposed Action; however, because there would be two fewer loads of pumice being hauled per day, there would be less potential for truck disturbance along the haul route during the early morning and late evening when MSO might be foraging.

Cumulative Effects

No currently ongoing or planned projects would contribute to noise or activity disturbance effects within a 0.5-mile radius of the proposed project site. Cumulative effects considered were those that would contribute to impacts on foraging habitat within a 4- to 5-mile radius from the project area. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management Project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees which will provide good quality foraging habitat. Mining activities at the Cerro del Pino Pumice Mine will remove 6.2 acres of trees. Because of the large range of owls, and the expanse of the Jemez Ranger District available for roosting/foraging, the combined intermittent and temporary loss of forage areas will not result in inability of MSO to find undisturbed available foraging sites.

Critical Habitat for the Mexican Spotted Owl

Alternative 1 (No Action), Alternative 2 (Proposed Action), and Alternative 3 (Reduced Traffic) would have no effect on critical habitat for the Mexican spotted owl.

Cumulative Effects

Because there is no critical habitat for the MSO located in the proposed project area, there is no contribution to cumulative effects.

SOUTHWESTERN REGION SENSITIVE SPECIES

Bald Eagle

Alternative 1 (No Action) would have no effect on the bald eagle. There would be no authorization of pumice mine activity. The 48 acres of ponderosa pine forest would remain intact. There would be no loss of perch/roost sites for transient bald eagles.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact individual bald eagles, but there would be no decline in species populations or trend to federal listing. Potential roost trees on the 48-acre expansion area would be cleared over a period of 8 years. No more than 16 acres would be open for mining at any time. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. Short term, there would be noise and activity disturbance associated with chainsaw and equipment used to remove trees from the area. Any eagles in the area would be adults that could avoid this noise disturbance.

Long term, there would be noise and activity disturbance at the site related to the pumice mining (e.g., bulldozers, large trucks, and other equipment) on a daily basis (with the exception of weekends and holidays) This noise could affect roosting use for an approximately 0.25-mile radius from the project site, encompassing approximately 462 acres. Bald eagles would most likely avoid the mine site, and roosting opportunities would be limited within the 0.25-mile disturbance zone while mining activities are underway.

There would be a permanent removal of 48 acres of potential roost/perch trees. These acres would be reclaimed and seeded, and would most likely remain in an open grassy stage for many years following the end of the pumice mining. Because this or the adjacent area does not contain any large bodies of water that would be considered breeding or foraging habitat, eagle use of this area would be transient during migration. Roosting habitat would be available in other adjacent forested stands, so there would not be an impact to the eagle's ability to find a roosting site outside of the 0.25-mile disturbance radius at the site.

Cumulative Effects

No current or future projects that would contribute to noise/disturbance effects occur within a 0.25-mile radius of the proposed project site. Effects considered were those that would contribute to loss of roost trees within a 4- to 5-mile radius. Thinning projects associated with the Paliza Vegetation and Road Management Project, Paliza Campground Timber Stand Improvement, and Pueblito Timber Sale have removed or will remove some large trees, but large trees will remain at these sites for roost/perch trees. FR 10 Tree Removal will remove large trees only

within 15 feet of either side of FR 10. These projects have minimal impact on availability of roost trees. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees. Because of the large range of eagles, the expanse of the District available for roosting, and the transient use during migration, the combined loss of roost trees from these projects would not create an adverse impact, or result in inability to find roost/perch trees.

Northern Goshawk

Alternative 1 (No Action) would have no impact on the northern goshawk. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term impacts of noise/activity disturbance from mining activities. There would be no short-term impacts on prey species and there would be no changes to the vegetative structure of the area.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact individual goshawks, but there would be no decline in species populations or trend to federal listing. There would be no impacts to northern goshawk breeding habitat associated with the pumice mine expansion; however, foraging habitat may be affected. Noise and activity disturbance associated with clearing the land would occur in the short term. Clearing of the land would require the removal of trees and topsoil within the project site, resulting in exposed pumice soil that would be unsuitable habitat for northern goshawk prey species during the period of active mining. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. Suitable re-vegetation that will support prey population can be expected to take several years following completion of the mining and reclamation activities.

The Forest Plan (USDA Forest Service 1987), as amended, contains goshawk guidelines for ponderosa pine forests outside PFAs. The Forest Plan describes the desired VSS distribution as the following: 10% grass/forb/shrub (VSS1), 10% seedling-sapling (VSS2), 20% young forest (VSS3), 20% mid-aged forest (VSS4), 20% mature forest (VSS5), and 20% old forest (VSS6). Opening sizes should be limited to 4 acres with a maximum width of up to 200 feet, and that a group of reserve trees, 3 to 5 trees per group, would be left if the opening is greater than 1 acre in size. Two snags, three downed logs, and 5 to 7 tons of woody debris should be left per acre.

The Proposed Action would create a 48-acre opening (well outside the 4-acre goshawk guideline standard) and would cause the conversion of these 48 acres from VSS3/4 to VSS1. Within the 6,000-acre northern goshawk foraging area, this conversion would raise the current VSS1 distribution from approximately 2.1% to 2.9%, contributing to the desired 10% landscape distribution. Because of the nature of this project, it is not within safety aspects to leave trees in the mined area because it would leave columns of pumice that could collapse. Therefore,

since the Forest Plan standards for snags and reserve trees will not be met, the proposed action may require a separate evaluation and a site-specific amendment to the Plan. The area would be reclaimed following mining of each block; logs set aside during clearing would be scattered back on the site. Therefore, reclamation would restore downed logs and woody debris to the site.

Noise and activity disturbance associated with mining activities could affect up to a 0.25-mile radius around the project site, encompassing approximately 462 acres. Goshawks would most likely avoid the specific area of disturbance (the mine site), but would also be limited for foraging in up to a 0.25-mile radius from the mine site depending on noise intensity, vegetation, and topography. This disturbance radius does not extend into the goshawk PFA, but does overlap goshawk foraging range. Because of the large, approximately 6,000-acre foraging range of goshawks, less than 8% of the foraging range would be impacted by mining activities. Mining should not affect the northern goshawk's ability to find prey because a large area would still be available for foraging. The conversion of 48 acres of VSS3/4 forest into VSS1 grassland has the potential to attract more open grassland bird species (e.g., sparrows) and could serve to increase diversity of available prey.

Two Forest Service GIS databases provided data for an analysis of old growth forest relative to the 48-acre project site. The first database included coverage of VSS 5 (mature forest) and 6 (old forest), and the second database, originally created for a NEPA assessment between 1987–1992, provided a map representing those areas that could potentially be managed as old growth. The analysis indicated that no mature or old growth stands or stands that could be managed as old growth forest occurred within the 48-acre project area (Figure 3.1).

Due to the presence during the August surveys of adult and juvenile goshawks on the periphery of the proposed project area, surveys for goshawks and nests (as needed) will be conducted during the 2008 field season. Mitigation measures that prohibit tree cutting between March 1 and August 15 will ensure no goshawk nests will be destroyed within the project area.

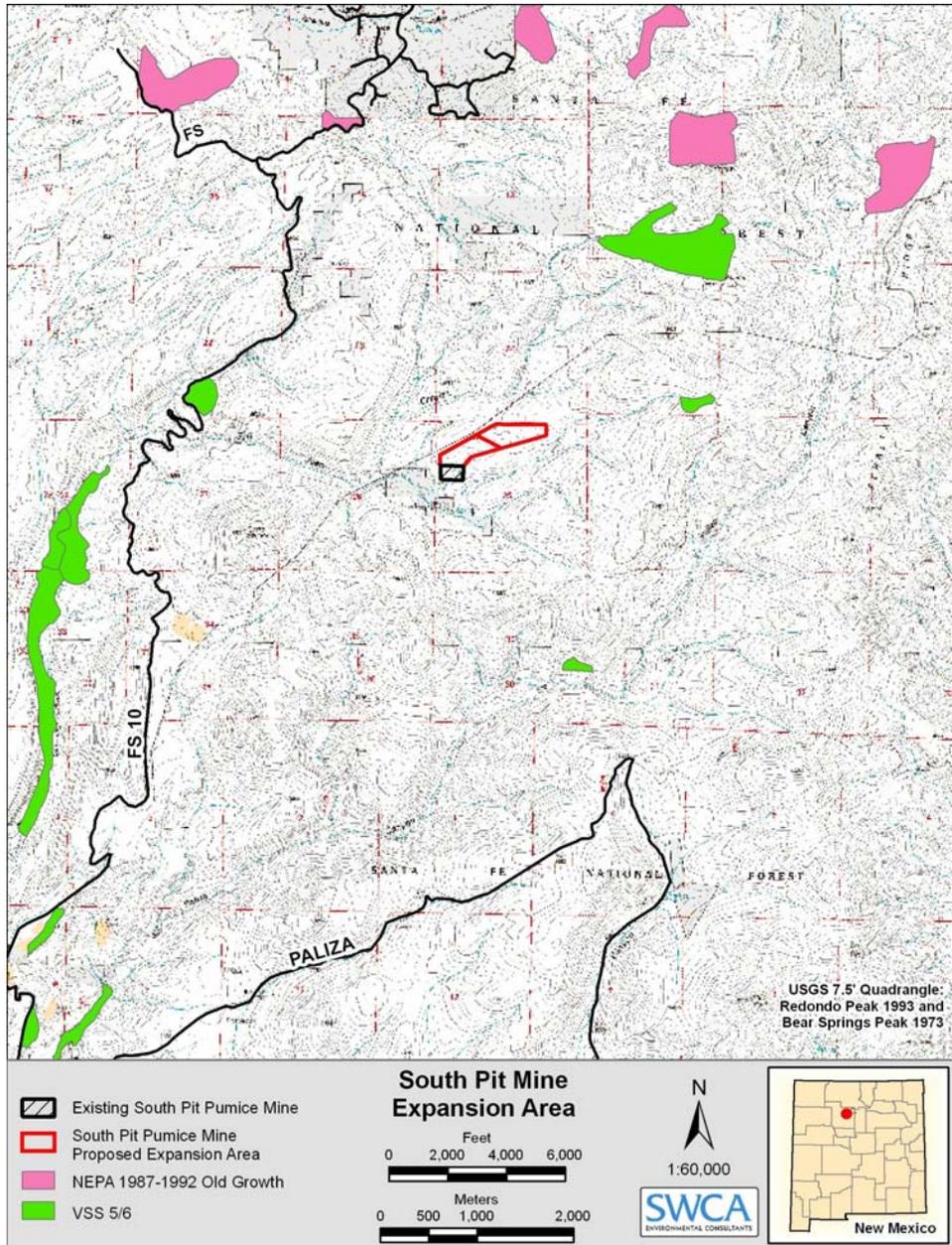


Figure 3.1. Map showing project area relative to old-growth forest distribution.

Cumulative Effects

No current or future projects would contribute to noise/disturbance effects within a 0.25-mile radius of the proposed project site. Effects considered were those that would contribute to impacts on roosting/foraging habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees that will provide good quality foraging habitat. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees. Following re-vegetation, reclaimed acres will be available for foraging, with a change from forest birds to birds of more open, grassy habitat. Because of the large range of goshawks and the expanse of the District available for roosting/foraging, the combined intermittent and temporary loss of forage areas will not limit the ability of goshawks to find undisturbed available hunting sites. Mitigation measures and continued monitoring as described previously will also result in reduced cumulative impacts.

Peregrine Falcon

Alternative 1 (No Action) would have no impact on the peregrine falcon. This alternative may increase potential for use of potential breeding habitat by reducing early morning disturbance of pumice truck traffic related to this pumice site.

Alternative 2 (Proposed Action) may impact individual falcons, but there would be no decline in species populations or trend to federal listing. There would be no direct impacts from pumice mining activities to peregrine falcon breeding habitat; however, foraging habitat may be affected. Avoidance from and adjacent to the project area due to noise and activity disturbances associated with mining activities can be expected. In addition, pumice mining will require the removal of trees and topsoil within the project area, resulting in exposed pumice soil. While no more than 16 acres of land would be open for mining at any given time throughout the duration of the project, exposed areas would be unsuitable for most falcon prey species. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. The clearing, active mining, and reclamation would occur over a period of 10 years. Suitable re-vegetation capable of supporting prey populations can be expected to take several years following reclamation activities. Peregrine falcon foraging may be improved with the conversion of the site from a forested stand to an open grassy area following reclamation. Vehicles traveling to and from the South Pit Pumice Mine site would bisect a suitable peregrine falcon breeding zone located on FR 10 south of the site. Pumice-hauling trucks going through this area, especially during early morning hours (before 10 A.M.), could disturb breeding behavior for any falcons that might use this site during the breeding season.

Alternative 3 (Reduced Traffic) would have the same effects as Alternative 2. The reduction of a hauling limit of four pumice loads per day would decrease disturbance events by three times through the suitable breeding habitat on FR 10.

Cumulative Effects

Projects that would increase existing and future traffic on FR 10 have potential to contribute to cumulative effects in Zone A suitable breeding habitat south of the proposed project area. The proposed project would maintain the current use of FR 10, and therefore would not cause an increase in pumice truckloads from past use by Copar (6 round trips per day). Utility Block, which is permitted at the Cerro del Pino Pumice Mine, also hauls six round trips per day, but combined use would not exceed past use of FR 10. The FR 10 Tree Removal Maintenance could temporarily increase large truck use on FR 10 for about five months. This combined use could detract from the potential for this designated habitat area to be used for nesting.

Preble's Shrew

Alternative 1 (No Action) would have no impact on the Preble's shrew. There would be no potential disturbance/harm to individuals or populations of Preble's shrew associated with the pumice mining activities.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact a localized Preble's shrew population, but would not cause a significant decline in regional populations or a trend to warrant federal listing. If the Preble's shrew is present within the project area, localized impacts on the population can be expected due to clearing vegetation in foraging habitat. Mining will also result in a large area of exposed pumice soil within the project area. While no more than 16 acres of land would be open for mining at any given time throughout the duration of the project, exposed areas would be unsuitable for Preble's shrew and their prey throughout the duration of mining activities. Upon completion of mining, each block would be reclaimed concurrently with the clearing and mining of new blocks. The clearing, active mining, and reclamation would occur over 10 years. It can be assumed that 1 to 25 acres would be unsuitable for Preble's shrew prey and foraging throughout the 10-year duration of the project. Suitable re-vegetation capable of supporting prey populations can be expected to take several years following reclamation activities. Because Preble's shrew is commonly associated with shrub/forested habitats, foraging may be negatively impacted long term because of the conversion of the site from a forested stand to an open grassy area following reclamation.

Cumulative Effects

Effects considered were those that would contribute to impacts on suitable habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza

Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees, which will provide quality foraging habitat. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees. Following re-vegetation, reclaimed acres will be available for foraging, but will not immediately provide the degree of shrub cover commonly associated with Preble's shrew suitable habitat.

Spotted Bat

Alternative 1 (No Action) would have no impact on the spotted bat. There would be no potential disturbance/harm to individuals or populations of spotted bat associated with the pumice mining activities.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact spotted bat individuals, but would not cause a decline in populations or a trend to warrant federal listing. There would be no direct impacts from pumice mining activities to spotted bat roosting habitat; however, foraging habitat may be affected. Avoidance from the project site and surrounding areas due to noise and activity disturbances during the daylight hours associated with mining activities can be expected, especially around the unnamed creek located to the south of the project area. In addition, pumice mining will require removing trees and topsoil within the project area, resulting in exposed pumice soil. While no more than 16 acres of land would be open for mining at any given time, these exposed areas would be unsuitable for most spotted bat prey species throughout the duration of mining activities. Upon completion of mining, each block would be reclaimed concurrently with the clearing and mining of new blocks. The clearing, active mining, and reclamation would occur over 10 years. It can be assumed that 1 to 25 acres would be unsuitable for spotted bat prey and foraging throughout the 10-year duration of the project. Suitable re-vegetation capable of supporting prey populations can be expected to take a period of years following reclamation activities.

Cumulative Effects

No current or future projects that would contribute to noise/disturbance effects occur within a 0.25-mile radius of the proposed project site. Effects considered were those that would contribute to impacts on suitable habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees, which will provide quality foraging habitat. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees. Following re-vegetation, reclaimed acres will be available for foraging.

Pale Townsend's Big-eared Bat

Alternative 1 (No Action) would have no impact on the pale Townsend's big-eared bat. There would be no potential disturbance/harm to individuals or populations associated with the pumice mining activities.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact pale Townsend's big-eared bat individuals, but would not cause a decline in populations or a trend to warrant federal listing. There would be no direct impacts from pumice mining activities to pale Townsend's big-eared bat hibernating habitat; however, foraging habitat may be affected, especially given that 75% of the species' diet depends upon forest plants (Burford and Lacki 1998). In addition, potential day and/or maternity roosts that could be located in trees within the project area would also have the potential to be impacted by project activities. While there would be noise and activity disturbances related to mining activities, all disturbances would be limited to daylight hours, leaving nocturnal bat activities undisturbed. Clearing the land would require removing trees and topsoil within the project site, resulting in exposed pumice soil and a lack of vegetation. Open mining areas would be limited to 16 acres at one time. This exposed land surface, void of any vegetation, would be unsuitable habitat for most prey species during the period of active mining and would also be unsuitable as day and/or maternity roost sites. Reclamation of previously mined 8-acre blocks would occur concurrently with clearing and mining new blocks after two 8-acre blocks have been cleared. Reclamation would include re-contouring the site, replacing salvaged topsoil, and re-vegetating with a seed mix approved by Santa Fe National Forest. It can be assumed that between 1 and 25 acres would be unsuitable for prey and foraging at any one time throughout the 10-year duration of the project. Suitable re-vegetation that will support prey population can be expected to take several years following completion of reclamation. The area of foraging habitat impacted should not affect the ability of the species to find prey within the region. Following reclamation, the affected area is expected to remain in an open, grassy state for many years before beginning to be reclaimed again by forest. This open area would provide diversity of prey habitat within the adjacent forested area for the bat, but would continue to be unsuitable for roosting because the area would be void of trees.

Cumulative Effects

Effects considered were those that would contribute to impacts on suitable habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees, which will provide quality foraging habitat. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees. Following re-vegetation of the affected

mine site, reclaimed acres will be available for foraging, but roosting opportunities will continue to be limited.

Botta's Pocket Gopher

Alternative 1 (No Action) would have no impact on the Botta's pocket gopher. There would be no potential disturbance/harm to individuals or populations of Botta's pocket gopher associated with the pumice mining activities.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact a localized Botta's pocket gopher population, but would not cause a significant decline in regional populations or a trend to warrant federal listing. If Botta's pocket gopher is present within the project area, localized impacts on the population can be expected due to clearing vegetation in potential foraging habitat. Mining will result in a large area of exposed pumice soil within the project area that will potentially not be viable digging and tunneling habitat. While no more than 16 acres of land would be open for mining at any given time throughout the duration of the project, exposed areas would be unsuitable for Botta's pocket gopher. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. The clearing, active mining, and reclamation would occur over 10 years. It can be assumed that between 1 and 25 acres would be unsuitable for foraging throughout the 10-year duration of the project. Suitable re-vegetation capable of supporting adequate Botta's pocket gopher foraging conditions can be expected to take several years following reclamation activities. Because Botta's pocket gopher diets consist mainly of grasses, forbs, and tubers, foraging may ultimately be beneficially impacted in the long term because of the conversion of the site from a forested stand to an open grassy area following reclamation.

Cumulative Effects

Effects considered were those that would contribute to impacts on suitable habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn will provide more open, shrubby areas with overstory and midstory trees, which temporarily reduce grasses and forbs used for forage. Mining activities at the Cerro del Pino Pumice Mine will clear approximately 6.2 acres of vegetation; however, following re-vegetation, reclaimed acres will be available for foraging, and may provide more grasses and forbs available as forage than the pre-disturbance condition.

Springer's Blazingstar

Alternative 1 (No Action) would have no impact on the Springer's blazingstar. There would be no potential disturbance/harm to individuals or populations of Springer's blazingstar associated with the pumice mining activities.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) may impact Springer's blazingstar individuals, but would not cause a decline in populations or a trend to warrant federal listing. Direct impacts to Springer's blazingstar individuals would occur from mining-related activities if the species is currently present within the proposed project expansion area. Clearing the land will require removing all vegetation and topsoil within the project area, resulting in exposed pumice soil. However, because of the species's preference to inhabit disturbed areas, such as road cuts, the project would not have any long-term detrimental effects. In fact, disturbance could promote the establishment of the species after reclamation takes place.

Cumulative Effects

Effects considered were those that would contribute to impacts on suitable habitat within a 4- to 5-mile radius. Thinning and/or prescribed burning in the Paliza Vegetation and Road Management project, Paliza Campground Timber Stand Improvement, Pueblito Timber Sale, and San Juan Prescribed Burn could temporarily affect the species due to vegetation removal and fire. Mining activities at the Cerro del Pino Pumice Mine will also remove approximately 6.2 acres of vegetation, but during reclamation, the opportunity for the species to inhabit previously disturbed areas should not cause long-term impacts on the species.

MANAGEMENT INDICATOR SPECIES

Merriam's Turkey

Alternative 1 (No Action) would result in no loss of habitat and no impacts on forest-wide populations. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term impacts of noise/activity disturbance for mining activities. This area would continue to be available for roosting and foraging.

Alternative 2 (Proposed Action) would result in no loss of breeding habitat for the turkey and no impacts on forest-wide populations. Avoidance from and adjacent to the project area due to noise and activity disturbances associated with mining activities can be expected. In addition, pumice mining will require the removal of trees and topsoil within the project area, resulting in exposed pumice soil. While no more than 16 acres of land would be open for mining at any given time throughout the duration of mining activities, exposed areas would be

unsuitable for foraging. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. The clearing, active mining, and reclamation would occur over a period of 10 years, and it can be assumed that between 1 and 25 acres would be unsuitable for foraging throughout the duration of the project. Suitable re-vegetation capable of supporting foraging requirements can be expected to take several years following the end of reclamation activities.

As each block is reclaimed and re-vegetated, seeds and insects would once again be available. It would be expected that these reclaimed acres would remain open and grassy for many years following the project. Although roosting opportunities would be decreased in the reclaimed areas, the project area would provide seeds and insects for good quality foraging. Because the project affects a small area (48 acres), this temporary loss of foraging and long-term loss of roosting habitat would not impact population trends because other roosting and foraging habitat is available in the area.

Long term, following completion of mining there would be an increase of habitat quality on these 48 acres, but this increase in habitat quality is too small to have a measurable effect on forest-wide population and habitat trends. There is potential for direct impacts to turkeys along the FR 10, FR 270, and FR 270C corridors from six round-trip pumice truck hauls per day. This is not increased over current conditions and would not be expected to impact forest-wide populations.

Alternative 3 (Reduced Traffic) would have the same impacts as the Proposed Action; however, because of the reduction of two truckloads hauled per day, there would be a reduction in potential for direct impacts to turkeys and young when crossing roads.

Cumulative Effects

Because the proposed project results in no long-term reduction of habitat or impacts to populations, there are no contributions to cumulative effects.

Hairy Woodpecker

Alternative 1 (No Action) would have no impacts on population trends or available habitat. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term effects of noise/activity disturbance from mining activities. There would be no reduction of available habitat. This area would be available in the short and long terms for nesting, roosting, and foraging.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) would have no effects on population trends. There would be direct impacts to hairy

woodpecker nesting, roosting, and foraging habitat associated with the proposed expansion of the South Pit Pumice Mine. Avoidance from and adjacent to the project area due to noise and activity disturbances associated with mining activities can be expected to occur within 0.25 mile of the project site. Pumice mining at the proposed project expansion area would result in the removal of living trees, snags, shrubs, herbaceous vegetation, and topsoil within the project area, resulting in exposed pumice soil. These actions would result in a 48-acre reduction in hairy woodpecker nesting, roosting, and foraging habitat. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. Following reclamation, the site is expected to remain as an open, grassy area for many years and would not supply large trees and snags required for nesting, roosting, and gleaning. However, logs salvaged during clearing would be scattered back on site during reclamation and could supply some limited foraging habitat for the hairy woodpecker. While nesting and roosting habitat would be permanently removed from the affected area, the loss would be negligible compared to the amount of habitat available for the species within the Santa Fe National Forest, and would not have a significant effect on forest-wide populations or habitat trends.

Cumulative Effects

Projects considered are those that would contribute to loss of nest cavity trees. Thinning projects in the Paliza Vegetation and Road Management Project, Paliza Campground Timber Stand Improvement, and Pueblito Timber Sale removed/would remove some larger trees; however, large trees would remain on site for nesting/grubbing. The Paliza and San Juan prescribed burns would create more snags. FR 10 Tree Removal would remove large trees only within 15 feet of either side of FR 10. These projects have minimal impact on availability of nesting trees. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees, resulting in the removal of nesting habitat in that area.

Mourning Dove

Alternative 1 (No Action) would have no impacts on population trends or available habitat. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term impacts of noise/activity disturbance from mining activities. There would be no reduction of available habitat. This area would continue to be available for nesting, roosting, and foraging.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) would result in no long-term loss of habitat for the mourning dove and no impacts on forest-wide populations. There would be slight improvement in foraging habitat that would be too small to have a measurable effect on forest-wide population and habitat trends. Nesting/roosting trees would be removed; however, the grassy

open habitat that would exist post-project would provide improved grassy foraging habitat. Short-term, there would be noise and activity disturbance associated with clearing the land. An area with a radius of up to about 462 acres surrounding the site could be affected by noise related to clearing the land and mining activity.

The clearing, active mining, and reclamation of all 48 acres would occur over a period of 10 years. It would be expected that these reclaimed acres would remain open and grassy for many years following the project; therefore, large trees for nesting and roosting would not be present long-term; however, re-vegetation of the site would restore seeds and insects to the site. Because the project affects a small area (48 acres), this loss of nesting/roosting habitat would not impact population trends because other habitat is immediately adjacent to this area.

Cumulative Effects

Because the proposed project results in no long-term reduction of habitat or impacts to populations, there are no contributions to cumulative effects.

Rocky Mountain Elk

Alternative 1 (No Action) would have no effect on population trends or reduction in available habitat. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term impacts of noise/activity disturbance from mining activities. There would be no reduction of available habitat. This area would be available in the short and long terms for grazing. Because grass and forbs are currently sparse on the site, grazing is limited. This alternative would not open the site and increase the amount of grasses and forbs that could be available for grazing.

Alternative 2 (Proposed Action) would result in no permanent loss of habitat available for elk and no effects on forest-wide populations. Avoidance from and adjacent to the project area due to noise and activity disturbances can be expected to occur within 0.25 mile of the project site. Pumice mining at the proposed project expansion area will result in the removal of living trees, snags, shrubs, herbaceous vegetation, and topsoil within the project area, resulting in exposed pumice soil. These activities will result in a temporary 48-acre reduction in Rocky Mountain elk grazing/browsing habitat. Upon completion of mining, each block would be reclaimed concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. These reclaimed blocks would have limited foraging value until mining disturbances cease at the site.

Long term, following completion of mining and reclamation, there would be an increase of grazing quality on these 48 acres. As each block is reclaimed and reseeded, grass would be more abundant than before the project; therefore, grazing opportunities in the area would be increased post-project. This increase in

habitat quality is too small to have a measurable effect on forest-wide population and habitat trends. While grazing habitat would be temporarily affected by construction activities, the loss would be negligible compared to the amount of habitat available for the species.

Alternative 3 (Reduced Traffic) would result in no permanent loss of habitat for the elk and no effect on forest-wide populations. Long term, following completion of mining there would be an increase of habitat quality on these 48 acres. This increase in habitat quality is too small to have a measurable effect on forest-wide population and habitat trends. Impacts would be the same as for the Proposed Action; however, because of the reduction of two truckloads hauled per day, there would be a slight reduction in potential for direct impacts on the roadways.

Cumulative Effects

Because the proposed project results in no long-term reduction of habitat, there are no contributions to cumulative effects.

MIGRATORY BIRDS

Alternative 1 (No Action) would have no impacts on overall populations of any migratory bird species or habitat. There would be no short-term noise or activity disturbance from the clearing of the 48 acres, or long-term impacts of noise/activity disturbance from mining activities. There would be no reduction of available habitat. This area would continue to be available for nesting, roosting, and foraging.

Alternative 2 (Proposed Action) would not cause any decline in overall species populations. There would be a reduction of habitat for birds that nest, roost, and forage in trees; however, post-project habitat would be created for birds preferring open, grassy habitat. Impacts that could occur from implementation of this project include disturbance from equipment noise and human activity during both clearing of the site and during mining activity. Nest trees would be removed over 48 acres and direct impacts to migratory birds could occur if trees were cut during the breeding season; however, the mitigation practices outlined in Chapter 2 would greatly reduce those impacts. Implementation of this project would not be expected to cause a decline in overall bird species populations.

Alternative 3 (Reduced Traffic) would have similar effects to Alternative 2. Because hauling would be reduced by two truckloads per day, potential would be reduced for direct impacts on birds in the road corridor.

Cumulative Effects

Projects considered are those that would contribute to loss of nest trees. Thinning projects in the Paliza Vegetation and Road Management Project, Paliza

Campground Timber Stand Improvement, and Pueblito Timber Sale removed/would remove some larger trees; however, large trees would remain on site for nesting. The Paliza and San Juan prescribed burns would create more snags. FR 10 Tree Removal would remove large trees only within 15 feet of either side of FR 10. These projects have minimal impact on availability of nesting trees. Mining activities at the Cerro del Pino Pumice Mine will remove approximately 6.2 acres of trees, removing nesting habitat from that 6.2 acres, and convert that site from habitat for tree-nesting/foraging species to birds of open, grassy habitat.

Important Bird Areas: There is no designated Important Bird Area (IBA) affected by the project. The nearest IBAs to the project site are:

- Golondrino Mesa: >40 miles
- Chama River Gorge from El Vado to N. Abiquiu Reservoir: >30 miles
- Caja del Rio (BLM): >15 miles
- Santa Fe Canyon Preserve (TNC): >40 miles
- Randall Davey Center, Santa Fe: >40 miles
- Santa Fe River (BoR) (La Bajada/Cochiti Springs): >20 miles

Overwintering Areas: Many important overwintering areas are large wetlands. Important overwintering areas recognized in the Forest include the Rio Chama and Rio Grande corridor.

This area is not recognized as an important overwintering area because significant concentrations of birds do not occur here and no unique or high diversity of birds winter here.

GENERAL WILDLIFE

Alternative 1 (No Action) would not affect wildlife. There would be no removal of trees on the project site; thus, no disturbance associated with clearing the 48 acres. There would be no long-term impacts of noise and activities associated with mining pumice in this area. Because mining would not be continued, there would be reduced traffic on FR 10, FR 270, and FR 270C that would reduce potential for direct impacts to wildlife crossing these roads. In addition, noise disturbance to wildlife along the road corridor would be reduced. There would be no conversion of this site to open grassy condition that could add to habitat diversity in the area.

Alternative 2 (Proposed Action) may result in impacts on individuals, but no decrease in overall populations or trend to federal listing. Short term, there would be noise and activity disturbance associated with clearing the land. Direct impacts would occur to burrowing species from clearing of trees and topsoil. An area with a radius of up to about 462 acres surrounding the site could be affected by noise

related to clearing the land and subsequent equipment use for mining activity. Direct impacts to wildlife could occur from six round trips per day on FR 10, FR 270, and FR 270C for hauling pumice. No more than 16 acres would be open for mining at any time. However, the clearing of land would remove trees and soil surface, leaving exposed pumice soil. This land surface would be unvegetated and, therefore, unsuitable for various wildlife food items, such as grasses, forbs, seeds, and insects. Also, there would be no cover from predators. Long term, reclamation of previously mined blocks would occur concurrently with clearing and mining of new blocks. Reclamation would include re-contouring the site, replacement of salvaged topsoil, and re-vegetation with a seed mix approved by the Santa Fe National Forest (Appendix 1). Logs set aside during clearing would be scattered back on the site.

The clearing, active mining, and reclamation of all 48 acres would occur over a period of 10 years. Reclamation of previously mined 8-acre blocks would occur concurrently with the clearing and mining of new blocks after two 8-acre blocks have been cleared. Reclamation procedures are provided in Appendix 1. As each block is reclaimed and re-vegetated, food and cover would once again be available. It would be expected that these reclaimed acres would remain open and grassy for many years following the project. Therefore, large roosting trees would not be present for the long term; however, these 48 acres would provide some diversity in habitat within the adjacent forested stand.

Alternative 3 (Reduced Traffic) would result in the same impacts as under the Proposed Action; however, because of the reduction of two round-trip truckloads hauled per day, there would be reduced potential for direct impacts to wildlife on FR 10.

Cumulative Effects

There are no ongoing or proposed projects within a 0.25-mile radius of this project that would contribute to noise or activity disturbance. Pumice hauling on FRs 10, 270, and 270C would not increase over the current use with combined use by Utility Block. There would be some project-related increase in vehicle use for Paliza prescribed burning and FR 10 maintenance which could temporarily increase potential for effects to wildlife along the road corridor.

3.2.3 Air Quality

This section discusses the existing air quality at the proposed project area and then discusses the environmental consequences for this resource from each of the proposed alternatives.

3.2.3.1 Affected Environment

Under the authority of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety. These federal standards, the National Ambient Air Quality Standards (NAAQS), regulate seven criteria pollutants, including lead (Pb), nitrogen oxide (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter 10 microns or less in size (PM₁₀), particulate matter 2.5 microns or less in size (PM_{2.5}), and ozone (O₃). Air quality in the project area falls under the jurisdiction of the State of New Mexico Environment Department, Air Quality Bureau (Air Quality Bureau), which was granted regulatory authority (monitoring and enforcement) by the EPA following the EPA's approval of New Mexico's State Implementation Plan.

The Air Quality Bureau classifies air quality in Sandoval County, New Mexico, as in attainment for all criteria pollutants regulated under the Clean Air Act (U.S. EPA 2007). This means that the air quality in the proposed project area does not exceed acceptable levels of the listed criteria pollutants per EPA standards. In attainment areas, Prevention of Significant Deterioration (PSD) regulations apply; in nonattainment areas, New Source Review regulations apply. The PSD regulations provide special protection from air quality impacts for certain areas, primarily national parks and wilderness areas, designated as Class I areas. Mandatory PSD Class I areas in New Mexico that were established under the Clean Air Act Amendment of 1977 are listed under 40 CFR §81.421.

One listed PSD Class I area occurs in general proximity to the proposed project area (40 CFR §81.421):

- Bandelier National Monument—administered by the U.S. Department of Interior, National Park Service, approximately 10 miles northeast of the project area.

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. Meteorological conditions have a significant impact on the pollutant concentrations because they control the dispersion or mixing of pollutants in the atmosphere through the influences of wind speed, wind direction, atmospheric stability, and other meteorological variables. For example, summer thunderstorms can produce dust storms that carry large quantities of particulate matter high into the atmosphere.

The affected environment for inert pollutants (all pollutants other than ozone and its precursors) is generally limited to a few miles downwind of a source. For PM₁₀ emissions from construction and operational activities, the affected environment is limited to the area immediately surrounding the construction sites. For large sources of ozone precursors, the affected environment for ozone can extend much

farther downwind than for inert pollutants. In the presence of solar radiation, the maximum effect of volatile organic compounds (VOCs) and nitrogen oxide (NO_x) emissions on ozone levels usually occurs several hours after these pollutants are emitted and many miles from the source. For the proposed project, the affected environment for air quality includes the Village of Ponderosa, the Jemez Pueblo, the community of Sierra de los Pinos, and the immediately surrounding areas of the Jemez Mountains.

Fugitive emissions generated as dust from the mine surface and adjacent roadways will be minimized using an environmentally sensitive dust palliative such as Soiltac®, an eco-safe, biodegradable, liquid copolymer that has been used in sensitive environments.

3.2.3.2 Environmental Consequences

Alternative 1 (No Action) would have no effect on air quality. No construction and/or operational emissions would result from this alternative.

Alternative 2 (Proposed Action) could result in a number of possible sources of pollutants associated with the construction and operation of the proposed mine expansion that could impact air quality. Emissions from combustion engines that may impact local air quality include engine exhaust from construction machinery, private vehicles used for worker transport, trucks hauling extracted pumice to and returning from the processing facility, and heavy equipment used for FR maintenance activities. Fugitive dust would also be a concern during the mine operation. Ground disturbance resulting from this alternative would release fugitive dust into the air, especially when vegetation is removed and bare soil is exposed to the wind. In addition, dust produced from trucks hauling pumice and private worker vehicles traveling on dirt roads would result in the creation of fugitive dust particles. Dust and PM₁₀ emissions will also result from the mining, crushing, and sorting of pumice in dry conditions.

No PSD Class I areas are in the immediate vicinity of the proposed project area. Several such areas do exist in the region, but they are at some distance from the proposed site (10 miles or greater). Therefore, given the long distances involved and the low emission increases expected from the Proposed Action, there would be no direct or indirect impacts to PSD Class I air quality in the short or the long terms under Alternative 2.

All emission/pollutant sources would be regulated by the Air Quality Bureau. If the proposed expansion area is authorized, the Developer would be required to obtain all appropriate and necessary air quality permits and would be held accountable for maintaining emission levels that are within the regulated limits.

Cumulative Effects

Under this alternative, the mining and transport of pumice materials from the South Pit Mine would result in cumulative impacts to air quality within the region. Present and foreseeable activities occurring within proximity to the proposed project area that could contribute to air quality impacts include the installation of a water line on FR 10 for the Village of Ponderosa, continued operation and pumice-hauling activities at the Cerro del Pino Pumice Mine, tree removal along the southern portions of the FR 10 right-of-way, a prescribed burn by the Forest Service in Paliza Canyon and nearby areas, ongoing recreational use, the re-opening of the Paliza Group and Family Campgrounds in 2007, and dam construction on SR 290.

The installation of a drinking water distribution pipeline for the Village of Ponderosa is currently under NEPA analysis by the Forest Service. If approved, installation of the proposed water line would include mechanically trenching 300-foot lengths (at a time) on the western side of FR 10. Due to mechanized equipment that would be used during the installation of the pipeline, minor and temporary air quality impacts would be expected.

The continued operation and pumice-hauling activities at the Cerro del Pino Pumice Mine contribute to air quality impacts. Activities that impact air quality are similar to those described in the Proposed Action for the South Pit Pumice Mine, and include emissions from construction equipment, personnel vehicles, and trucks hauling pumice, and the production of fugitive dust particles. Utility Block, the operator at the Cerro del Pino Pumice Mine, currently has an air quality permit in place with the Air Quality Bureau.

Tree removal in the FR 10 right-of-way and prescribed burning in Paliza Canyon and nearby areas of the Forest would likely contribute to cumulative air quality impacts due to the use of heavy machinery and smoke released to the atmosphere during prescribed burning activities. Impacts from these activities would be limited in duration, and would result in temporary air quality impacts in the region.

The Paliza Group and Family Campgrounds are expected to re-open for public use after two years of construction before or during the summer and fall of 2007. Recreational use of the southern portion of FR 10 (where recreational use is thought to be primarily concentrated) is expected to substantially increase in late spring through the fall. Access to the Paliza Group and Family Campgrounds requires vehicular traffic on dirt roads, which will result in the seasonal release of fugitive dust particles.

Dam repair adjacent to SR 290 near the northern terminus of the Village of Ponderosa would result in cumulative impacts to air quality within the region. Though no schedule has been set for the dam repair, these activities could begin as early as 2007 and could last through 2010. Due to mechanized equipment that would be used during the bridge construction, minor and temporary air quality impacts are expected.

In summary, Alternative 2 would add cumulatively to air quality impacts within the region. Recreational forest use, combined with concurrent construction, operational, and prescribed burning activities are projected to occur during spring, summer, and fall, with the summer season being the expected peak of all cumulative activities, resulting in the greatest air quality impacts. Verifying that projects have all applicable and appropriate air quality permits in place will ensure that the EPA-regulated air quality constituents remain at acceptable levels within the region.

Alternative 3 (Reduced Traffic) would result in the same impacts as under the Proposed Action; however, because of the reduction of two round-trip truckloads hauled per day, vehicular emissions and fugitive dust produced during pumice transport would be reduced.

Cumulative Effects

Cumulative effects under the Reduced Traffic Alternative would be similar to those effects discussed under the Proposed Action. The primary difference would be that pumice hauling under this alternative would be limited to four round trips per day rather than six, resulting in less vehicular emissions and fugitive dust produced during pumice transport. However, this alternative could lead to pumice being removed from the proposed expansion area for a longer time period.

3.2.4 Soils

This section discusses the existing soil characteristics at the proposed project area and then discusses the environmental consequences to this resource from each of the proposed alternatives.

3.2.4.1 Affected Environment

The soils common in the proposed project area are described in the Terrestrial Ecosystem Survey (TES) of the Santa Fe National Forest (USDA Forest Service 1993). The existing conditions of the soils common to the project area are derived from these sources and from field reconnaissance. According to the TES (USDA Forest Service 1993), the 48-acre South Pit Pumice Mine site is composed of one soil type: Map Unit 631. Map Unit 631 is composed of Mollic Eutroboralfs, loamy-skeletal, mixed mineralogy; deep, very cindery sandy loams that support ponderosa pine forests. These soils are well developed and high in productivity, with significant accumulations of clays in the subsurface horizons, and are high in organic matter content and available nutrients. The soil in this area developed in place from bedrock of tuff. It has a moderate erosion hazard rating and is considered to have low potential for mass wasting (erosion caused by gravitational pull). No wetland soils were identified within the expansion area during the field survey.

3.2.4.2 Environmental Consequences

Alternative 1 (No Action) would have no effect on soils.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) would lead to soil in the proposed project area converting from a well developed productive soil to a young soil due to the changes in soil structure and nutrient balance resulting from stripping, stockpiling, and re-spreading activities. However, because of the small area impacted, plus the mitigations of stockpiling in stratum and the native seeding combined with mulching, the effects on the soil resource should be limited. Although re-vegetation would stabilize the area and minimize loss of soil productivity, restoration of full soil productivity would take many years. Therefore, the loss of soil productivity is considered to be an irreversible impact to the 48-acre project site that cannot be avoided.

Cumulative Effects

The current mining operations in the area plus the operation of the Cerro del Pino Pumice Mine would result in further loss of soil productivity in the watershed. Reclamation activities are required for each of these activities, which would result in the restoration of soil stability but not productivity on each site in the coming years.

3.2.5 Water Resources

This section discusses the existing water resources (surface waters and groundwater) at the proposed project area and then discusses the environmental consequences for these resources from each of the proposed alternatives.

3.2.5.1 Affected Environment

SURFACE WATER

The proposed project area is within the San Juan Canyon sub-watershed, which is a tributary to the Vallecitos Creek. The Vallecitos Creek Watershed lies within the 5th Code Middle Jemez River Watershed (HUC 130202023). This watershed is part of the larger 4th Code Jemez Watershed (HUC 13020202). The proposed project area is approximately 0.25 mile due east of San Juan Canyon. The stream in this canyon is not listed on the 2004 State of New Mexico Integrated Clean Water Act §303(d)/§305(b) Report; thus this stream has not been listed as impaired for any water quality parameters.

According to the Santa Fe National Forest's GIS database, San Juan Canyon does not support riparian vegetation near the project area. It is likely that dispersed pockets of riparian plants do occur within San Juan Canyon in this area; however, they are probably isolated and are very limited by their surrounding soils. Riparian areas are identified by using the Santa Fe National Forest's TES to locate complexes of community types and/or subseries communities that meet the definition of riparian area; specifically an area with a perennial or intermittent stream, hydrophytic plants, and hydric soil.

GROUNDWATER

The proposed South Pit Pumice Mine expansion would be located above a deep aquifer identified as South Mountain Rhyolite. This aquifer sits in rhyolite material several (200 to 300) feet below overlying clay paleosol and pumice materials (Self et al. 1988). Tritium dating of the water in this aquifer in nearby residential wells indicates that the water has been underground for at least 30 years and is thought to come from the higher peaks surrounding the Valle Grande on the Valles Caldera National Preserve (Colpitts 1994).

Water flow in the deep aquifer is probably controlled by fractures in the rhyolite. Field observations indicate that these fractures do not penetrate overlying materials such as pumice. In other words, though the pumice material is highly heterogeneous and may seem porous, there is apparently a very small to insignificant water flux through the pumice material to the underground aquifer, which runs under the proposed project area (Colpitts 1994).

A spring is located approximately 1,000 feet south of the existing mine, suggesting a shallower aquifer or a pathway from the deep aquifer to the surface. The reduction in size of the proposed mine from 100 to 48 acres and the direction of the mining north of the existing mine away from the spring should avoid any impacts to the spring or connecting aquifer.

3.2.5.2 Environmental Consequences

SURFACE WATER

Alternative 1 (No Action) would have no effect on surface water resources.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) would not effect the surface waters located just south of the project area, as well as those 0.25 mile west of the proposed project area because of design criteria requiring internal drainage and no on site stockpiling of pumice. It is possible that a small amount of sediment might be moved off the project site as a result of proposed mining activities; however, it is highly unlikely that this sediment would reach San Juan Canyon.

Cumulative Effects

It is possible that the San Juan Mesa Prescribed Burn and the Paliza Prescribed Burn may elevate and further contribute to the amount of sediment deposited into San Juan Canyon. However, this amount would be extremely minimal due to back-burning operations that were conducted or would be conducted away from the stream.

GROUNDWATER

Alternative 1 (No Action) would have no potential for effects on groundwater resources because there would be no mining activities under this alternative.

Alternative 2 (Proposed Action) and Alternative 3 (Reduced Traffic) is unlikely to have adverse effects on this resource. Under both of these alternatives, mining activities would occur on 48 acres to extract pumice materials. Pumice extraction would occur from approximately 10 to 30 yards below the ground surface, but would not go below 30 yards (90 feet).

Given this depth of pumice extraction and characteristics of the aquifer, it is highly unlikely that the proposed pumice mine would have any adverse effect on the recharge of the deep aquifer. The aquifer is overlain by approximately 200 feet of mostly impermeable coarse pumice and clay paleosol materials that would prevent flow into the aquifer from the proposed mine site.

In addition to the on site materials that would prevent water flux with the aquifer, project design criteria would require that no fuel or oil materials be stored on site and that spill kits are required on site to contain spilled materials such as petroleum, should a spill occur.

Cumulative Effects

Nearby pumice mines, including the El Cajete Pumice Mine to the north and the Cerro del Pino to the southeast, are at least partially located in the same aquifer. Although impacts from mining in other watersheds may not be applicable to the potential impacts from the proposed 48-acre mine expansion, these other projects are not known to have affected groundwater resources, and data gathered from nearby wells has not shown any impacts to groundwater resources. Given that the El Cajete Mine has not resulted in any impairment to the local groundwater quality and is considerably larger than the 48-acre expansion, no cumulative effects are expected to result from either of the proposed alternatives.

3.2.6 Heritage Resources

3.2.6.1 Affected Environment

A 100% survey of the proposed expansion area was completed during 2005. A determination that no historic properties would be affected by the proposed project will be submitted to the State Historic Preservation Officer for concurrence.

The proposed project is located in an area considered an “Ancestral Hunting Area” by the Pueblo of Jemez. There are four cultural resource sites within one-half mile of the project site.

3.2.6.2 Environmental Consequences

Alternative 1 (No Action)

Alternative 2 (Proposed Action), and Alternative 3 (Reduced Traffic) would have no direct effect on heritage resources given that surveys of the proposed project area **and surrounding areas** resulted in a finding that there are no sites in the project area. Removal of vegetation and the disturbance associated with mining activities may affect the habitat in the project area or the presence of game species near the project site. Sediment could affect downstream heritage resource sites if barriers and other sediment controls are ineffective.

Cumulative Effects

There would be no cumulative impacts to heritage resource areas, since there are no sites within the project area. Game species would be expected to disperse from the area during mining operations. Prescribed burning would further reduce habitat available to game species, although this impact would be short-term. Following vegetative recovery from burns, habitat in these areas is likely to be improved for many game species.

It is possible that the San Juan Mesa Prescribed Burn and the Paliza Prescribed Burn may further contribute to the amount of sediment deposited downstream. However, this amount would be extremely minimal due to back-burning operations that would be conducted.

4.0 CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, federal, state, and local agencies, tribes, and non-Forest Service persons during the development of this EA.

IDT MEMBERS:

Team Member	Position	Contribution/Role
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John Peterson	Former Jemez District Ranger	Responsible official
Mike Dechter	Jemez and Cuba Ranger District National Environmental Policy Act (NEPA) Coordinator	Writer/editor Traffic Analysis Interdisciplinary Team Leader
Josephine Wargo	Jemez Ranger District Wildlife Biologist	Wildlife analysis/editor
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Tony Largaespada	Jemez, Cuba, and Coyote Ranger District Heritage Resource Specialist	Heritage resources analysis
Connie Constan	Jemez, Cuba, and Coyote Ranger District Heritage Resource Specialist	Heritage resources analysis
Larry Gore	Santa Fe National Forest Geologist	Proposed action and editor
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Kevin Wellman	SWCA Environmental Consultants NEPA Specialist	Writer/editor Resource Impact Analysis
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FEDERAL, STATE, AND LOCAL AGENCIES:

- U.S. Fish and Wildlife Service
- New Mexico Department of Game and Fish
- New Mexico Environment Department
- New Mexico Department of Transportation

TRIBES:

- Pueblo of Jemez
- Pueblo of Santo Domingo

OTHERS:

- Forest Guardians
- Sangre de Cristo Audubon Society
- Terry Johnson, raptor specialist
- Village of Ponderosa
- Sierra los Pinos Homeowner's Association

Comment: This will be updated after public review.

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APPENDICES

APPENDIX 1. RECLAMATION PLAN

South Pit Pumice Mine Expansion

Reclamation Plan

Site Description

The mine expansion is proposed on a gentle (9 to 17 degree) slope facing south-southwest and currently vegetated primarily with ponderosa pine. The mine expansion encompasses an area of 48 acres including temporary roads. There are no major drainages crossing the proposed mine area. The site is easily accessed from Forest Road 270 and 270C.

Site Preparation

Prior to mining, the standing trees knocked over (with roots attached) and stacked around the upper edge of the mine site and along the access road. After the trees have been removed, the soil will be stockpiled as berms around the edges of the disturbed area.

While mining is ongoing, these berms will prevent runoff from the site. Waterbars and/or other preventative measures will be installed on the temporary access road to prevent runoff from the road.

After the soil has been stripped, stockpiled, and the access road has been constructed, mining will begin. Estimated mine depth is less than 15 feet. As an area is mined out, the working face will be sloped to no more than a 3:1 (horizontal: vertical) slope.

At the conclusion of mining, the site will be reshaped to approximate the surrounding topography. The stockpiled soil will be spread over the entire disturbed area. The access road will be reshaped, ripped (tilled or otherwise disturbed to prepare for plant germination), and revegetated to blend with the surrounding topography.

Seeding

Seed Mix. A seed mix consisting of at least five grass species and three forbs/shrubs from the following list will be applied by broadcast seeding in the

References

Fall. Use a ratio of approximately 80 – 90 percent grasses and 10 – 20 percent forbs and shrubs.

Common Name	Species	lbs/acre PLS
Grasses		
Mountain muhly	Muhlenbergia montana	2
Junegrass	Koeleria macrantha	0.5
Arizona fescue	Festuca arizonica	1
Pine dropseed	Blepharoneuron tricholepis	5
Squirreltail	Elymus elymoides	4
Indian ricegrass	Oryzopsis hymenoides	3
Sand dropseed	Sporobolus cryptandrus	2
Mountain brome	Bromus carinatus	1
Sideoats grama	Bouteloua curtipendula	2
Western wheatgrass	Agropyron smithii	4
Intermediate wheatgrass	Thinopyrum intermedium	1
Forbs and Shrubs		
American vetch	Vicia americana	1
Utah sweetvetch	Hedysarum boreale	2
Golden banner	Thermopsis montana	3
Currant	Ribes cereum	4
Woods rose	Rosa woodsii	4
Mountain mahogany	Cercocarpus montanus	1.5

Application of Seed.

- Seeds may be applied by broadcast seeding
- Ensure seed mixes are certified weed-free. Seed mix and its application should comply with the requirements of all federal statutes and regulations governing seeds, plants, and weeds. These requirements include but are not limited to: the Noxious Weed Control Act, the Federal Seed Act and Amendments, and all other rules and regulations pertaining to these laws.
- Provide certification substantiating that material complies with specified requirements by submitting seed bag tags and copies of seed invoices identified by project name.
- Obtain native grass seed from sources in New Mexico or surrounding states
- Plant seed mix at a rate of approximately 32-37 PLS lbs/acre
- Do not seed during windy weather, or when topsoil is dry, saturated, or frozen.
- Immediately following seeding operation, lightly rake seedbed or loosen with a chain harrow to provide approximately ¼ inch of soil cover over most of the seed.
- Prohibit vehicles and other equipment from traveling over the seeded areas. Signs will be posted in the reclaimed roadways to discourage travel into the reclaimed area.

Mulching and Erosion Control

Straw mulch is appropriate for slopes at or flatter than 2:1. Straw shall be from oats, wheat, rye, barley, or rice that are free from noxious weeds, mold, or other objectionable material.

- Apply straw mulch at a minimum rate of 1.5 tons per acre of air-dry material.
- Spread mulch uniformly over the area either by hand or by mechanical means to achieve 80 percent ground cover.
- Depth of applied straw mulch shall not exceed three inches.
- Do not mulch when wind velocity exceeds 10 mph.
- If straw mulched areas will not stay correctly anchored, crimping or hydraulic mulch wood fibers with tackifier may be used.
- Prohibit foot/vehicle traffic from hydraulically mulched areas.

Monitoring and Maintenance

The Forest Service will monitor the site until acceptable re-vegetation has occurred to minimize erosion and ensure noxious weeds do not become established in the disturbed area. Acceptable re-vegetation will consist of a minimum of 50% ground cover (live vegetation or vegetation litter) after at least three growing seasons.

- The permittee will be responsible for noxious weed control, maintaining posted signs, repairing excessive erosion, and re-seeding, mulching, or installing other

References

erosion control devices if necessary until the reclamation is accepted by the Forest Service.

- Should excessive erosion develop due to steep slopes preventing revegetation, use erosion control blankets over native grass seeding or other measures such as bonded fiber matrix or watering.
- Reseed void areas greater than 10 square feet or repetitive voids greater than 4 square feet amounting to more than 20 percent of any area that appears the growing season following installation.
- After completion of work, clear site of excess soil, waste material, debris and objects that may hinder maintenance and detract from the appearance of the site.