

Contents

| | | |
|-----------|---|------------|
| 1. | PURPOSE OF AND NEED FOR ACTION | 1-3 |
| | Project Area Description | 1-3 |
| | Project Background | 1-4 |
| | History of the Preserve | 1-4 |
| | Valles Caldera Preservation Act..... | 1-7 |
| | Purpose of and Need for Action | 1-10 |
| | Purpose | 1-10 |
| | Need..... | 1-11 |
| | Plan Goals, Objectives, and Monitored Outcomes | 1-13 |
| | Goals and Objectives | 1-13 |
| | Monitored Outcomes | 1-14 |
| | Performance Requirements | 1-15 |
| | Guiding Laws, Policies, and Procedures..... | 1-15 |
| | Related Legislation and Policies | 1-18 |
| | Relationship to Other Planning Documents for Valles Caldera National Preserve | 1-19 |
| 2. | ALTERNATIVES | 2-3 |
| | Introduction | 2-3 |
| | Implementation-level Decisions..... | 2-3 |
| | Programmatic-level Decisions..... | 2-4 |
| | Alternatives Summary | 2-4 |
| | Development and Screening of Alternatives | 2-8 |
| | Public Involvement | 2-8 |
| | Key Issues..... | 2-10 |
| | Alternatives Development | 2-13 |
| | Alternatives Screening | 2-14 |
| | Alternatives Considered for Detailed Analysis | 2-16 |
| | Alternative 1: No Action | 2-17 |
| | Elements Common to All Action Alternatives | 2-18 |
| | Alternative 2: Banco Bonito Visitor Contact Station..... | 2-29 |
| | Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 2-37 |
| | Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 2-45 |
| | Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 2-47 |
| | Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 2-53 |
| | Comparison of Alternatives Selected for Detailed Analysis..... | 2-55 |
| | Alternatives Considered but Eliminated from Detailed Analysis | 2-74 |
| | Continuation of the Interim Recreation Program | 2-74 |
| | Open Access for Dispersed Recreation: the Valle Vidal Model..... | 2-74 |
| | Wilderness/Roadless Management Emphasis: San Pedro Parks Wilderness Model | 2-74 |
| | Smaller-scale Development at Valle Grande Locations | 2-75 |
| | Visitor Center at the Current Valle Grande Staging Area | 2-75 |

| | |
|---|------------|
| Visitor Center at the Headquarters Area | 2-75 |
| Estimated Costs for Alternatives | 2-76 |
| Consistency with the Purposes of the National Environmental Policy Act | 2-82 |
| Alternative 1: No Action | 2-82 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 2-82 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 2-83 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 2-83 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 2-84 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 2-84 |
| 3. AFFECTED ENVIRONMENT | 3-3 |
| Visitor Experience | 3-3 |
| Study Area..... | 3-3 |
| Visitation..... | 3-3 |
| Recreation | 3-9 |
| Science and Education..... | 3-27 |
| Visual Resources | 3-29 |
| Study Area..... | 3-29 |
| Visual Setting | 3-29 |
| Landscape Character..... | 3-37 |
| Alternative 2 Site | 3-40 |
| Alternative 3A and 3B Site | 3-44 |
| Alternative 4A and 4B Site | 3-51 |
| Scenic Integrity | 3-57 |
| Landscape Visibility | 3-59 |
| Visual Absorption Capability..... | 3-64 |
| Visitor Capacity Zoning | 3-66 |
| Summary of Visual Resource Characteristics | 3-67 |
| Transportation | 3-68 |
| Study Area..... | 3-68 |
| NM-4 Corridor..... | 3-68 |
| Internal Roads and Transportation..... | 3-72 |
| Vegetation | 3-78 |
| Study Area..... | 3-78 |
| Preserve Overview | 3-78 |
| Vegetation Communities | 3-79 |
| Rare Plants..... | 3-87 |
| Weeds and Problem Species | 3-88 |
| Grazing and Vegetation..... | 3-89 |
| Fish and Wildlife | 3-90 |
| Study Area..... | 3-90 |
| Fish..... | 3-91 |
| Reptiles and Amphibians..... | 3-92 |
| Birds | 3-92 |
| Mammals..... | 3-94 |
| Special-status Species..... | 3-97 |
| Study Area..... | 3-97 |

| | |
|--|--------------|
| Federal Threatened and Endangered Species..... | 3-97 |
| Federally Protected Eagle Species | 3-104 |
| Federally Protected Migratory Birds | 3-105 |
| State Threatened and Endangered Species | 3-105 |
| USFS Sensitive Species..... | 3-108 |
| Geology and Soils | 3-118 |
| Study Area..... | 3-118 |
| Geologic History | 3-118 |
| Soils..... | 3-119 |
| Geothermal Resources | 3-132 |
| Water | 3-136 |
| Study Area..... | 3-136 |
| Watershed Overview | 3-136 |
| Surface Waters..... | 3-137 |
| Wetlands | 3-145 |
| Groundwater..... | 3-147 |
| Floodplains | 3-147 |
| Natural Sounds | 3-150 |
| Study Area..... | 3-150 |
| Sound Fundamentals | 3-150 |
| Sound Propagation..... | 3-152 |
| Human and Wildlife Response to Changes in Noise Levels | 3-156 |
| Construction Noise | 3-157 |
| Existing Sound Sources | 3-157 |
| Cultural Resources..... | 3-160 |
| Study Area..... | 3-160 |
| Archeology | 3-160 |
| Historic Period | 3-162 |
| Ethnography | 3-165 |
| Cultural Resource Inventory and Evaluation | 3-166 |
| Cultural Resource Surveys in the Preserve..... | 3-167 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 3-172 |
| Alternatives 3A and 3B: Entrada Del Valle Visitor Center | 3-173 |
| Alternatives 4A and 4B: Vista Del Valle Visitor Center..... | 3-173 |
| Socioeconomics | 3-174 |
| Study Area..... | 3-175 |
| Population Growth..... | 3-175 |
| Economy | 3-178 |
| Public Attitudes, Beliefs, and Values | 3-185 |
| Environmental Justice | 3-187 |
| Study Area..... | 3-187 |
| Minority Populations | 3-188 |
| Low-income Populations | 3-191 |
| Limited English Proficiency | 3-191 |
| Carbon Footprint and Air Quality..... | 3-192 |
| Study Area..... | 3-193 |
| Greenhouse Gases | 3-193 |
| Air Quality..... | 3-198 |
| Preserve Management and Operations | 3-198 |
| Study Area..... | 3-199 |
| Staffing | 3-199 |

| | |
|---|------------|
| Management Activities | 3-199 |
| 4. ENVIRONMENTAL CONSEQUENCES | 4-3 |
| Cumulative Impacts Analysis Method | 4-3 |
| Visitor Experience | 4-11 |
| Guiding Regulations and Policies..... | 4-11 |
| Methodology for Analyzing Impacts..... | 4-12 |
| Alternative 1: No Action | 4-12 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-13 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-16 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-19 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-21 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-23 |
| Visual Resources | 4-24 |
| Guiding Regulations and Policies..... | 4-24 |
| Methodology for Analyzing Impacts..... | 4-24 |
| Alternative 1: No Action | 4-25 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-26 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-32 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-41 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-42 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-51 |
| Transportation | 4-51 |
| Guiding Regulations and Policies..... | 4-52 |
| Methodology for Analyzing Impacts..... | 4-52 |
| Alternative 1: No Action | 4-52 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-53 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-55 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-58 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-59 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-61 |
| Vegetation | 4-62 |
| Guiding Regulations and Policies..... | 4-62 |
| Methodology for Analyzing Impacts..... | 4-63 |
| Alternative 1: No Action | 4-63 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-65 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-67 |

| | |
|--|-------|
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-69 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-70 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-71 |
| Fish and Wildlife | 4-72 |
| Guiding Regulations and Policies..... | 4-72 |
| Methodology for Analyzing Impacts..... | 4-72 |
| Alternative 1: No Action | 4-73 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-74 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-78 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-80 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-81 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-83 |
| Special-status Species | 4-84 |
| Guiding Regulations and Policies..... | 4-84 |
| Methodology for Analyzing Impacts..... | 4-86 |
| Alternative 1: No Action | 4-86 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-89 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-91 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-93 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-94 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-96 |
| Geology and Soils | 4-97 |
| Guiding Regulations and Policies..... | 4-97 |
| Methodology for Analyzing Impacts..... | 4-97 |
| Alternative 1: No Action | 4-98 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-100 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-103 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-106 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-107 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-109 |
| Water | 4-109 |
| Guiding Regulations and Policies..... | 4-109 |
| Methodology for Analyzing Impacts..... | 4-113 |
| Alternative 1: No Action | 4-113 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-115 |

| | |
|--|-------|
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-117 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-120 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-121 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-123 |
| Natural Sounds | 4-123 |
| Guiding Regulations and Policies..... | 4-123 |
| Methodology for Analyzing Impacts..... | 4-123 |
| Alternative 1: No Action | 4-125 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-126 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-130 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-132 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-133 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-136 |
| Cultural Resources..... | 4-136 |
| Guiding Regulations and Policies..... | 4-136 |
| Methodology for Analyzing Impacts..... | 4-138 |
| Alternative 1: No Action | 4-140 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-142 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-145 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-147 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-148 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-150 |
| Socioeconomics | 4-150 |
| Guiding Regulations and Policies..... | 4-150 |
| Methodology for Analyzing Impacts..... | 4-152 |
| Alternative 1: No Action | 4-152 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-154 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-156 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-158 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-159 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-160 |
| Environmental Justice | 4-161 |
| Guiding Regulations and Policies..... | 4-161 |
| Methodology for Analyzing Impacts..... | 4-163 |
| Alternative 1: No Action | 4-164 |

| | |
|---|-------|
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-165 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-167 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-168 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-169 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-170 |
| Carbon Footprint and Air Quality..... | 4-171 |
| Guiding Regulations and Policies..... | 4-171 |
| Methodology for Analyzing Impacts..... | 4-172 |
| Alternative 1: No Action | 4-172 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-174 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-177 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-180 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-181 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-182 |
| Preserve Management and Operations | 4-182 |
| Guiding Regulations and Policies..... | 4-182 |
| Methodology for Analyzing Impacts..... | 4-184 |
| Alternative 1: No Action | 4-184 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-185 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-188 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-190 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-192 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-193 |
| Unavoidable Adverse Impacts | 4-193 |
| Alternative 1: No Action | 4-193 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-193 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-194 |
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-195 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-196 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-196 |
| Short-term Uses and Long-term Productivity | 4-196 |
| Alternative 1: No Action | 4-197 |
| Alternative 2: Banco Bonito Visitor Contact Station..... | 4-197 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-198 |

| | |
|---|------------|
| Alternative 3B: Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-198 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-198 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-198 |
| Irreversible or Irretrievable Commitments of Resources | 4-198 |
| Alternative 1: No Action | 4-199 |
| Alternative 2: Banco Bonito Visitor Contact Station | 4-199 |
| Alternative 3A: Entrada del Valle Visitor Center—Primary Access via Shuttle System | 4-199 |
| Alternative 3B : Entrada del Valle Visitor Center—Primary Access via Personal Vehicle | 4-199 |
| Alternative 4A: Vista del Valle Visitor Center—Primary Access via Shuttle System | 4-200 |
| Alternative 4B: Vista del Valle Visitor Center—Primary Access via Personal Vehicle | 4-200 |
| 5. CONSULTATION AND COORDINATION | 5-3 |
| Public Involvement Activities | 5-3 |
| Public Scoping | 5-3 |
| Public Notification | 5-3 |
| Public Alternatives Meeting | 5-4 |
| Other Public Outreach Activities | 5-4 |
| Agency Consultation and Coordination | 5-6 |
| Public Agencies and Organizations | 5-6 |
| Cultural Resource Consultation | 5-6 |
| Threatened and Endangered Species Consultation | 5-6 |
| List of Recipients | 5-6 |
| List of Preparers and Contributors | 5-7 |
| 6. REFERENCES CITED..... | 6-1 |
| 7. GLOSSARY AND ACRONYMS..... | 7-1 |
| Glossary | 7-1 |
| Acronyms | 7-5 |

List of Tables

| | |
|---|------|
| Table 2-1: Level 1 Screening Summary | 2-15 |
| Table 2-2: Level 2 Screening Summary | 2-16 |
| Table 2-3: Signature-based Design Objectives for Valles Caldera National Preserve | 2-20 |
| Table 2-4: Water Usage by Facility Type | 2-23 |
| Table 2-5: Summary of Alternative 2 Components | 2-30 |
| Table 2-6: Summary of Alternative 3A Components | 2-38 |
| Table 2-7: Summary of Alternative 3B Components | 2-46 |
| Table 2-8: Summary of Alternative 4A Components | 2-48 |
| Table 2-9: Summary of Alternative 4B Components | 2-54 |
| Table 2-10: Comparison of Alternatives | 2-57 |
| Table 2-11: Summary of Environmental Consequences | 2-60 |

| | |
|---|-------|
| Table 2-12: Operational Reductions | 2-77 |
| Table 2-13: Alternatives Construction / Capital Cost Estimates | 2-78 |
| Table 3-1: Annual Visitation and Revenues for the Preserve, 2005–2010 | 3-3 |
| Table 3-2: Orders Placed on the VCT Website 2005–2007 | 3-4 |
| Table 3-3: Cities of Origin of Visitors at the August 2006 Open House..... | 3-7 |
| Table 3-4: Annual Visitor Participation in Public Programs, 2003–2007 | 3-10 |
| Table 3-5: Annual Visitor Participation in Public Programs, 2010 | 3-10 |
| Table 3-6: Recreational Activities Undertaken and Desired at the Preserve..... | 3-11 |
| Table 3-7: Equestrian Trails | 3-24 |
| Table 3-8: Implementation-level Visual Resource Characteristics Summary..... | 3-68 |
| Table 3-9: Class and Miles of Administrative and Public Roads on the Preserve..... | 3-75 |
| Table 3-10: Vegetation Types on the Preserve | 3-79 |
| Table 3-11: Rare Plants Documented on the Preserve | 3-87 |
| Table 3-12: State Threatened and Endangered Animal Species Documented as Present in Sandoval and Rio Arriba Counties | 3-105 |
| Table 3-13: USFS Sensitive Species Requiring Analysis | 3-109 |
| Table 3-14: Soil Map Units Description..... | 3-127 |
| Table 3-15: Soil Map Units Suitability | 3-128 |
| Table 3-16: Soil Map Units Water Features..... | 3-131 |
| Table 3-17: Soil Map Units Water and Wind Erosion Susceptibility | 3-132 |
| Table 3-18: Soil Thermal Conductivity | 3-134 |
| Table 3-19: Soil Typical Profiles | 3-135 |
| Table 3-20: Soil Composition 60 Inches below Surface | 3-136 |
| Table 3-21: Results of the 2003 and 2006 New Mexico Stream Pollution Surveys | 3-140 |
| Table 3-22: Common Sounds and Their Associated Noise Levels | 3-151 |
| Table 3-23: Historic and Prehistoric Resources Documented through 2010..... | 3-168 |
| Table 3-24: Archeological Sites In or Near the Alternative 2 Location | 3-172 |
| Table 3-25: Archeological Sites In or Near the Alternative 3A/3B Location | 3-173 |
| Table 3-26: Archeological Sites In or Near the Alternative 4A/4B Location | 3-174 |
| Table 3-27: Estimated Population and Growth Rate | 3-175 |
| Table 3-28: County Employment by Sector | 3-178 |
| Table 3-29: Unemployment Statistics | 3-179 |
| Table 3-30: Total Income by Two-digit NAICS Code (U.S. \$ Thousands) | 3-180 |
| Table 3-31: Annual Visitation and Revenues for the Preserve, 2005–2010..... | 3-183 |
| Table 3-32: Annual Revenues by Public Program Source for the Valles Caldera National Preserve 2005–2010 (U.S. \$) | 3-184 |
| Table 3-33: Minority Populations | 3-188 |
| Table 3-34: Population below Poverty Level..... | 3-191 |
| Table 3-35: Approximate Distance Traveled by Visitors in Preserve, 2009 | 3-195 |
| Table 3-36: Total Estimated Carbon Dioxide Emissions (Tons/Year) | 3-197 |
| Table 4-1: Cumulative Actions | 4-5 |

List of Figures

| | |
|---|------|
| Figure 1-1: Vicinity Map | 1-5 |
| Figure 1-2: Valles Caldera National Preserve..... | 1-6 |
| Figure 2-1: Implementation-level Decisions | 2-5 |
| Figure 2-2: Programmatic-level Decisions | 2-6 |
| Figure 2-3: Alternatives Screening Process..... | 2-9 |
| Figure 2-4: Alternative 2 Map—Banco Bonito..... | 2-33 |
| Figure 2-5: Alternative 2 Conceptual Layout—Banco Bonito Visitor Contact Station..... | 2-34 |
| Figure 2-6: Alternative 2 Visitor Contact Station Conceptual Rendering | 2-35 |
| Figure 2-7: Alternative 3A and 3B Map—Entrada del Valle..... | 2-42 |

| | |
|---|-------|
| Figure 2-8: Alternative 3A and 3B Conceptual Layout—Entrada del Valle | 2-43 |
| Figure 2-9: Alternative 3A and 3B Visitor Center Conceptual Rendering..... | 2-44 |
| Figure 2-10: Alternative 4A and 4B Map—Vista del Valle | 2-50 |
| Figure 2-11: Alternative 4A and 4B Conceptual Layout..... | 2-51 |
| Figure 2-12: Alternative 4A and 4B Visitor Center Conceptual Rendering..... | 2-52 |
| Figure 2-13: Comparison of Environmental Consequences | 2-73 |
| Figure 3-1: Mountain Bike Trails | 3-12 |
| Figure 3-2: Elk Hunting Units | 3-15 |
| Figure 3-3: Fishing — East Fork of the Jemez River | 3-17 |
| Figure 3-4: Fishing — San Antonio Creek | 3-18 |
| Figure 3-5: Hiking Trails | 3-20 |
| Figure 3-6: Coyote Call Trail | 3-21 |
| Figure 3-7: Equestrian Trails | 3-23 |
| Figure 3-8: Winter Activities | 3-25 |
| Figure 3-9: Major Landscape Features | 3-31 |
| Figure 3-10: Rock Features, Water, and Vegetation | 3-32 |
| Figure 3-11: Logging/Other Roads and Disturbed Areas | 3-34 |
| Figure 3-12: Redondito Peak after Logging, 1975 | 3-35 |
| Figure 3-13: Redondito Peak after Regrowth, 2005—Roads Remain Visible | 3-35 |
| Figure 3-14: Temporary Portable Buildings and Parking Area at the Valle Grande Staging Area | 3-36 |
| Figure 3-15: Photographs of Alternative 2 Proposed Visitor Contact Station Site..... | 3-42 |
| Figure 3-16: Alternative 2 Landscape Character | 3-43 |
| Figure 3-17: Photographs of Alternative 3A and 3B Proposed Visitor Center Site..... | 3-49 |
| Figure 3-18: Alternative 3A and 3B Landscape Character | 3-50 |
| Figure 3-19: Photographs of Alternative 4A and 4B Proposed Visitor Center Site..... | 3-55 |
| Figure 3-20: Alternative 4A and 4B Landscape Character | 3-56 |
| Figure 3-21: Alternative 2 Landscape Integrity | 3-60 |
| Figure 3-22: Alternative 3A and 3B and Alternative 4A and 4B Landscape Integrity | 3-61 |
| Figure 3-23: Seen Area Map..... | 3-62 |
| Figure 3-24: Visual Absorption Factors..... | 3-67 |
| Figure 3-25: Traffic Congestion during 2006 Open House | 3-71 |
| Figure 3-26: Preserve Roads..... | 3-73 |
| Figure 3-27: Current Shuttle Routes in the Preserve..... | 3-74 |
| Figure 3-28: Road Type Examples | 3-75 |
| Figure 3-29: Vegetation Map..... | 3-80 |
| Figure 3-30: Potential Mexican Spotted Owl Habitat | 3-102 |
| Figure 3-31: Locations and Potential Habitat for the Jemez Mountain Salamander in and Surrounding the Preserve | 3-112 |
| Figure 3-32: General Soil Groups Preserve-wide | 3-122 |
| Figure 3-33: Alternative 2 Soil Map Units | 3-123 |
| Figure 3-34: Alternative 3A and 3B Soil Map Units | 3-124 |
| Figure 3-35: Alternative 4A and 4B Soil Map Units | 3-125 |
| Figure 3-36: Preserve Watershed Management Units | 3-138 |
| Figure 3-37: Wetlands..... | 3-146 |
| Figure 3-38: Groundwater Points of Diversion..... | 3-148 |
| Figure 3-39: 100-year Floodplains | 3-149 |
| Figure 3-40: Sound Transmission Refraction and Diffraction Effects | 3-155 |
| Figure 3-41: Cultural Resource Survey Areas as of Fall 2010 | 3-171 |
| Figure 3-42: Regional Map of Valles Caldera National Preserve | 3-177 |
| Figure 3-43: Location of Native American Reservations near the Preserve..... | 3-190 |
| Figure 4-1: Existing Conditions, Alternative 2 | 4-28 |
| Figure 4-2: Simulation of Proposed Alternative 2 Visitor Contact Station | 4-29 |
| Figure 4-3: Existing Conditions, Alternative 3A/3B, from the South | 4-34 |
| Figure 4-4: Simulation of Proposed Alternative 3A/3B Visitor Center, from the South..... | 4-35 |
| Figure 4-5: Existing Conditions, Alternative 3A/3B, from the North | 4-36 |
| Figure 4-6: Simulation of Proposed Alternative 3A/3B Visitor Center, from the North | 4-37 |

| | |
|---|------|
| Figure 4-7: Existing Conditions, Alternative 4A/4B, from NM-4 | 4-44 |
| Figure 4-8: Simulation of Proposed Alternative 4A/4B Visitor Center from NM-4 | 4-45 |
| Figure 4-9: Existing View of Alternative 4A/4B Site across the Valle Grande | 4-48 |
| Figure 4-10: Simulation of Proposed Alternative 4A/4B Visitor Center across the Valle Grande..... | 4-49 |
| Figure 4-11: Erosion Hazards on the Preserve from Past Actions | 4-99 |