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*New Mexico Gas Company
Taos Mainline Re-route Project*

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List of Acronyms and Abbreviations

°F	degrees Fahrenheit
ACEC	Area of Critical Environmental Concern
amsl	above mean sea level
APE	area of potential effects
ARMS	Archaeological Records Management Section
AUM	active animal unit month
BA	biological assessment
BISON-M	Biota Information System of New Mexico
BLM	Bureau of Land Management
BMPs	best management practices
CFR	Code of Federal Regulations
CWA	Clean Water Act
EA	environmental assessment
EMNRD	New Mexico Energy, Minerals and Natural Resources Department
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act of 1973
FLPMA	Federal Land Policy and Management Act
GIS	geographic information system
HDD	horizontal directional drilling
HPD	New Mexico Historic Preservation Division
HUC	Hydrologic Unit Code
KOP	key observation point
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act
NM	New Mexico State Highway
NMBM&MR	New Mexico Bureau of Mines and Mineral Resources
NMDA	New Mexico Department of Agriculture
NMDGF	New Mexico Department of Game and Fish
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMGC	New Mexico Gas Company
NMOCD	New Mexico Oil Conservation Division
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWP	Nationwide Permit
ORV	outstandingly remarkable value
OSHA	U.S. Department of Labor, Occupational Health and Safety Administration
PEM	palustrine emergent
POD	Plan of Development
psig	pounds per square inch gauge
RMP	Taos Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SCADA	Supervisory Control and Data Acquisition
SWCA	SWCA Environmental Consultants
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
TFO	Taos Field Office
TUA	temporary use area

USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRI	visual resource inventory
VRM	visual resource management
WSR	Wild and Scenic River

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1 INTRODUCTION

1.1 Background

New Mexico Gas Company (NMGC) has submitted a Standard Form 299 Right-of-Way (ROW) application to the Bureau of Land Management (BLM) Taos Field Office (TFO) requesting the long-term use of public lands for the purpose of re-routing a 6-mile, 12-inch-diameter steel underground natural gas distribution line; constructing a new block valve south of Pilar, New Mexico; and improving the existing Rinconada block valve. The proposed project is located in Rio Arriba County and Taos County, New Mexico, between Rinconada and Pilar.

The NMGC is requesting the ROW grant to provide a more secure and safe service of natural gas delivery to the communities of Taos, Questa, and Red River in Taos County, New Mexico. The Taos Mainline is the only natural gas pipeline to serve these communities, and active geologic activity in the Rio Grande Gorge is causing stress to the existing steel 8-inch line. The pipeline is located in proximity to the Embudo fault, which has a pivot point near Pilar where fault motions along the north flank of the Picuris Mountains have been documented (Haneberg et al. 1992). Geologic figures for the pipeline vicinity are provided in Appendix A. Debris slide cienegas occur along the Rio Grande, identified by Haneberg and colleagues as locations where “upward-directed seepage forces and extremely shallow water tables greatly increase the likelihood of liquefaction and/or landsliding during an earthquake” (Haneberg et al. 1992:9–10). These debris slide cienegas have evidence of active movement (i.e., persistent, localized zones of saturation, fresh cracks and scarps, and preponderance of vegetation), thereby posing a threat to the existing pipeline in the absence of seismic events.

The pipeline stress has been monitored and managed by the applicant since the mid-1980s, when a pipeline break prompted two sections of buried pipeline to be excavated and replaced with flexible aboveground pipe. In the 1990s, three additional segments of pipeline were excavated and replaced with aboveground pipe in areas where soil movement had been identified and pipeline stress as a concern. Pipeline stress continues to be monitored using strain gauges attached to the pipeline along unexcavated portions of the pipeline. As a result of this ongoing monitoring and maintenance effort, the NMGC is concerned that shifting landslide deposits could cause natural gas service to be interrupted to these communities. Approximately 6 miles of pipeline need to be relocated outside the landslide area between the communities of Rinconada and Pilar to protect the transmission of natural gas to the Taos County service area.

NMGC is requesting a 75-foot ROW grant from the BLM TFO, which includes 50 feet of permanent ROW and 25 feet of temporary use area (TUA). Staging areas and access roads would also be required for the construction phase. Two alternative alignments are considered in this Environmental Assessment (EA) (Figure 1.1). Alternative A involves BLM and private land, with the route terminating southeast of the village of Pilar. Alternative D also involves BLM and private land, with the route bypassing the village of Pilar and terminating on top of Taos Plateau (Figure 1.1). The BLM is the lead federal agency for the undertaking. The BLM TFO has assigned this project the ROW case file number NM133382.

The legal descriptions for the pipeline re-route alternatives, staging areas, and access roads are shown in Table 1.1.

Table 1.1. Legal Descriptions for Proposed NMGC Taos Mainline Re-route Project

Project Element	Ownership	Legal Description (Township, Range, Section)
Alternative A: Proposed Re-route along New Mexico Highway 68 Terminating near Pilar		
Pipeline and block valves	BLM	T23N, R10E, Sections 11, 12, 14, 15 T23N, R11E, Sections 5, 6 T24N, R11E, Section 32
Pipeline and block valves	Private	T23N, R10E, Sections 1, 12 T24N, R11E, Section 32
Staging areas	BLM	T23N, R10E, Section 15 T24N, R11E, Section 32
Staging areas	Private	T23N, R10E, Sections 21, 22
Alternative D: Proposed Re-route along New Mexico Highway 68 Terminating on Taos Plateau		
Pipeline and block valves	BLM	T23N, R10E, Section 11, 12, 13, 14 T23N, R11E, Section 5, 6 T24N, R11E, Section 28, 32, 33
Pipeline and block valves	Private	T23N, R10E, Section 12 T23N, R11E, Sections 1, 6 T24N, R11E, Sections 32, 33
Staging areas	BLM	T23N, R10E, Section 15, 22 T24N, R11E, Section 28, 33
Staging areas	Private	T23N, R10E, Section 21, 22
Access roads	BLM	T24N, R11E, Section 22, 23, 27, 28
Access roads	Private	T24N, R11E, Section 23

As part of the application process, a Plan of Development (POD) has been prepared. The project description, design features, and construction methods described in the POD have been incorporated into this EA.

General biological surveys of the two alignment alternatives were conducted in May through October 2014 and August 2015, and the survey results will be included in a Biological Assessment (BA) submitted to the BLM (SWCA Environmental Consultants [SWCA] 2016). Additionally, a cultural resources inventory report for the proposed project was prepared (Trowbridge et al. 2016). An archeological survey of the project area was conducted from May 7 to 14, June 9 to 13, and September 24 to 26, 2014, and August 5 to 8, 2015, to aid in complying with Section 106 of the National Historic Preservation Act (NHPA).

1.2 Purpose and Need for Action

The BLM's purpose is to respond to NMGC's ROW request for legal use of, and access across, public lands managed by the BLM. The BLM's multiple-use mandate includes allowing access to public lands for projects, such as roads, pipelines, and transmission lines, in a manner that conserves the multitude of other resources found on public lands. The need for the Proposed Action is established by the BLM's responsibility under the Federal Land Policy and Management Act (FLPMA) to respond to an application for a ROW grant for use of federal land.

Decision to be made: The BLM will decide whether or not to grant the right of way, and if so, under what terms and conditions.

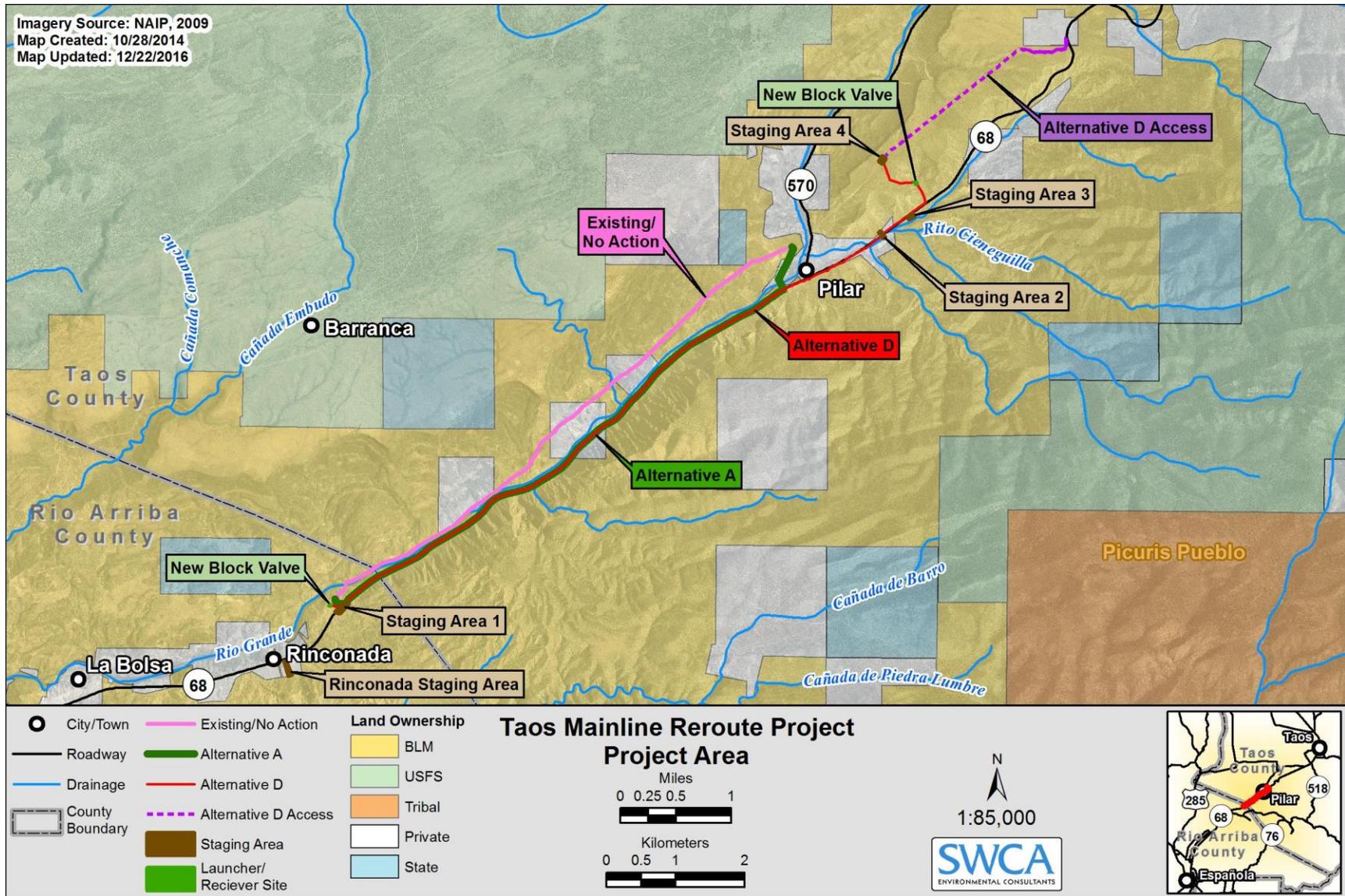


Figure 1.1. Project area map.

1.3 Land Use Plan Conformance

The Proposed Action would be in conformance with the Taos Resource Management Plan (RMP) (BLM 2012), the applicable land use plan prepared under the provisions of BLM planning regulations 43 Code of Federal Regulations (CFR) 1600. The Taos RMP has the following goals for land use authorizations, utility corridors, and communication sites:

Provide land use authorizations in support of public needs to be done in consideration of and in compliance with the various management decisions, goals, objectives, and resource restrictions required to protect or maintain multiple uses and resource values. (BLM 2012:40)

Establish an efficient system of utility corridors and communication sites to meet the energy and communication needs of the public with minimum negative impacts on visual, biological, cultural, and physical resources. (BLM 2012:41)

Project objectives are consistent with the Taos RMP's management goals, as well as management objectives and management guidance for land use authorizations, utility corridors, and communication sites (see Section 2.2.3. of the Taos RMP).

This EA tiers to the 2012 RMP and complies with the requirements of the National Environmental Policy Act (NEPA). The EA analyzes the site-specific impacts associated with the Proposed Action and its alternatives, identifies mitigation measures to potentially reduce or eliminate those impacts, and provides the BLM decision makers with detailed analysis to inform the decision to approve or deny the Proposed Action or an alternative.

1.4 Identification of Issues

Appropriate scoping helps identify issues, resources, and resource uses that could be impacted, reducing the chances of overlooking a potentially significant issue or reasonable alternative. Scoping takes place both internally within the BLM via meetings with resource specialists, as well as externally where the public is invited to comment. Issues are points of dispute or contention, and areas of concern or uncertainty.

The BLM's interdisciplinary team of resource specialists conducted internal scoping on the Proposed Action during several meetings in late 2014 and early 2015, and identified several resource issues regarding the Proposed Action.

In addition, a scoping letter describing the project and its location was posted on the TFO's website (http://www.blm.gov/nm/st/en/fo/Taos_Field_Office.html) in order to invite public comment. A public scoping meeting was held on November 13, 2014, in Taos, New Mexico. Public scoping comments were collected from November through December 16, 2014. Comments received during the public scoping period assisted with identification and refinement of alternatives. Alternative D, described in Section 2.2, was developed by the NMGC and the TFO in response to comments received during the public scoping period about avoiding the potential pipeline re-route through the Village of Pilar. See Section 5 for more information about public scoping. Based on these efforts, the issues listed below have been determined relevant to the analysis of this action.

1.4.1 Soils

Soils within the project area would be disturbed by the proposed project. Some soils are sensitive to erosion. How would the proposed project impact soils and how would potential erosion be addressed?

1.4.2 Water Resources

The proposed project is located along the Rio Grande and nearby springs. What are the potential impacts to these water resources from the proposed project?

1.4.3 Cultural Resources

The proposed project area includes known cultural resources. How would the proposed project affect National Register of Historic Places (NRHP)-eligible cultural resources? Is there potential for impacts to known archaeological sites, National Historic Trails, and other cultural resources?

1.4.4 Vegetation and Invasive Non-native Species

The proposed project would cross many types of vegetation, from riparian and wetland to upland vegetation. How would the proposed project impact vegetative communities and avoid the introduction of non-native species into the area?

1.4.5 Wildlife and Special Status Species

Wildlife and special status species, such as the southwestern willow flycatcher (*Empidonax traillii extimus*), raptors, and other migratory birds, are known to occur in the area. How would the proposed project impact these species?

1.4.6 Visual Resources

The project vicinity is managed under Visual Resource Management (VRM) Class II. The objective of Class II is to retain the existing character of the landscape. How would the scenic quality of the landscape be affected by the proposed project? Would the proposed project comply with the management objectives for VRM Class II?

1.4.7 Special Designations and Recreation

The proposed project falls within the designated Wild and Scenic River (WSR) segment of the Rio Grande, the Lower Gorge Area of Critical Environmental Concern (ACEC), and a small portion of the Copper Hill ACEC, and is near a designated segment of the Old Spanish National Historic Trail (which is a possible northern branch of the Camino Real to Taos). How would the proposed project affect the outstandingly remarkable values (ORVs) associated with this segment of the Rio Grande, the relevant values of the ACECs, and the management prescriptions for the Old Spanish Trail? How would the proposed project impact recreation opportunities associated with these special designations?

1.4.8 Livestock Grazing

A portion of the proposed project (north end of Alternative D) intersects BLM grazing allotment 517, known as the Hondo Allotment. How would the proposed project impact livestock grazing in the allotment and existing range improvements?

1.4.9 Travel and Access

The proposed project is aligned within portions of the New Mexico Highway (NM) 68 ROW. NM 68 is the primary access route for the residents of Rinconada, Pilar, and a heavily used route to Taos. Construction of the proposed project would cause traffic delays and partial closures along NM 68. How would the proposed project impact travel and access along NM 68 during construction?

1.4.10 Public Health and Safety

The proposed project is located near the communities of Rinconada and Pilar. Additionally, one of the alternatives follows a highly traveled segment of NM 68. How would proposed project construction and ongoing activities impact public health and safety?

1.4.11 Issues Dismissed from Detailed Analysis

Per the BLM NEPA Handbook (H-1790-1), an issue can be eliminated from detailed analysis in an EA if it does not help the decision maker to make a reasoned choice between alternatives and it is not necessary to determine the significance of impacts. Table 1.2 summarizes those resources and resource uses that do not have issues identified; therefore, they are recommended to be dismissed from detailed analysis in the EA.

Table 1.2. Resources and Resource Uses Recommended for Dismissal from Detailed Analysis

Resource/Resource Use	Rationale for Dismissal
Socioeconomics	NMGC estimates the proposed project would cost approximately \$12.7 million to construct. This effort would require construction workers to be located in the project vicinity for approximately 4 months. Once construction is complete, the proposed transmission line would be maintained and operated by existing NMGC staff that work in the area. The project would enable NMGC to continue to deliver reliable natural gas to meet the demands in Taos County. However, the temporary status of the construction-related jobs and small number of operational jobs does not warrant detailed analysis in this EA.
Environmental Justice	Pilar and Rinconada are two primary communities adjacent to the project area. U.S. Census data are not available for these communities. Taos County demographic data show that these areas may be considered environmental justice communities based on median income levels, poverty rates, and presence of minority populations. The proposed project would avoid direct impacts to the communities of Pilar and Rinconada by routing the proposed pipeline along NM 68 for the majority of the route. The proposed project is not expected to have disproportionate environmental impacts on the local communities and populations because of the proposed alignment's collocation along the shoulder of the highway; therefore, this topic is not recommended for detailed analysis in the EA.
Air Quality	Construction activities have the potential to cause temporary changes to air quality by generating fugitive dust. However, the proposed project would have design features to minimize impacts to air quality. No long-term or permanent impacts to air quality would result from the proposed project.
Paleontological Resources	No paleontological resources have been identified within the project area. The proposed project could include a design features to minimize impacts to paleontology, if deemed necessary by the BLM.
Minerals	The proposed project is not located in an area with active nor planned mineral development activities; therefore, no resource use conflicts would occur.
Rio Grande del Norte National Monument	A portion of the proposed project, located on Taos Plateau, borders the southern edge of the Rio Grande del Norte National Monument. Though the project would involve disturbance contiguous to the monument, no surface disturbance or other associated activities would occur within the boundary of the monument. Therefore, aside from the potential temporary displacement of wildlife from the immediate area, no other monument objects protected under the monument's establishing proclamation would be affected.
Native American Religious Concerns	The BLM's cultural resources program identifies the presence of traditional cultural properties (TCPs) through ongoing BLM tribal consultation efforts. Based on current information, the Proposed Action would not impact any known TCPs, prevent access to sacred sites, prevent the possession of sacred objects, or interfere with or hinder the performance of traditional ceremonies and rituals pursuant to the American Indian Religious Freedom Act of 1978 (42 United States Code 1996) or Executive Order 13007.

2 DESCRIPTION OF ALTERNATIVES

This chapter describes the three alternatives being considered for the Taos Mainline Re-route Project. In addition to the No Action Alternative, two action alternatives are considered, referred to as Alternative A and Alternative D. The naming convention is a result of additional alternatives originally considered by the BLM and ultimately dismissed from detailed analysis. These dismissed alternatives, Alternatives B and C, are discussed in Section 2.6. Alternative D has been identified by the BLM as the Proposed Action and the BLM's Preferred Alternative.

2.1 Alternative A: Pipeline Re-Route along NM 68 Terminating Near Pilar

The project area for Alternative A would include a 50-foot-wide permanent ROW and a 25-foot-wide TUA for 5.5 miles. The TUA would be located adjacent to the 50 feet permanent ROW to be used for vehicle movement and construction equipment maneuvering. The total proposed ROW would require approximately 58 acres, with 34 acres of permanent ROW and 24 acres of TUA. Four staging areas, requiring a total of approximately 8 acres, would be required for equipment storage, vehicle parking, and other construction-related activities.

The Alternative A route would begin approximately 300 feet south of the existing Rinconada block valve. The pipeline would cross the block valve staging area and open BLM land for approximately 400 feet to connect with the NM 68 ROW, located east of the Rinconada block valve. The pipeline would follow the NM 68 ROW north towards Pilar for approximately 5 miles. South of Pilar, the line would be diverted out of the NM 68 ROW, bored under the highway and the Rio Grande, and cross private land for approximately 2,300 feet (0.4 mile) before reaching the project terminus at the new Pilar block valve. The pipeline would be bored through the small hill to reach the project terminus located west of Pilar (see Figure 1.1). Table 2.1 describes the Alternative A project area by land ownership.

Table 2.1. Alternative A: Acreages of ROW by Land Ownership

Project Element	Land Ownership	Total Proposed ROW (acres)	TUA (acres)	Permanent ROW (acres)
5.5-mile proposed pipeline re-route	BLM (4.5 miles)	42	14	28
	Private (1.0 mile)	8	2	6
Block valves	BLM	0.2	–	0.2
Staging areas	BLM	5	5	–
	Private	3	3	–
Total Acreage of ROW		58.2	24	34.2

Table 2.2 shows the surface disturbance, both temporary and permanent, associated with Alternative A. It is important to note that permanent disturbance was calculated based on the alignment located outside the NM 68 highway ROW.

Table 2.2. Alternative A Surface Disturbance Acreages by Land Ownership

Project Element	Land Ownership	Total Surface Disturbance (acres)	Temporary Surface Disturbance (acres)	Permanent Disturbance* (acres)
5.5-mile proposed pipeline re-route	BLM (4.5 miles)	42	41.6	0.4
	Private (1.0 mile)	8	7.5	0.5
Block valves	BLM	0.2	–	0.2
Staging areas	BLM	5	5	–
	Private	3	3	–
Total Acreage of Surface Disturbance*		58.2	57.1	1.1

* Permanent disturbance is calculated based on a 15-foot-wide permanent corridor directly over the pipeline, plus the permanent block valves, located outside the NM 68 ROW.

Preliminary information obtained by NMGC from the New Mexico Department of Transportation (NMDOT) indicates the NM 570 bridge does not have the necessary load capacity to transport the construction equipment over the Rio Grande in order to facilitate construction of the pipeline segment and new block valve located on the west side of the river. A temporary bridge may be necessary to move equipment and materials across the river.

2.2 Alternative D: Proposed Pipeline Re-route along NM 68 Terminating on Taos Plateau (Preferred Alternative)

The project area for Alternative D would include a 50-foot-wide permanent ROW and a 25-foot-wide TUA for 7.2 miles. The TUA would be located adjacent to the 50-foot permanent ROW to be used for vehicle movement and construction equipment maneuvering. The total proposed ROW would require approximately 77 acres, with 47 acres of permanent ROW and 30 acres of TUA. Four staging areas would be required for equipment storage, vehicle parking, and other construction-related activities.

The Alternative D route would follow the same alignment as Alternative A to the point where Alternative A is diverted out of the NM 68 ROW (described above). At this location, Alternative D would continue north of the BLM Rio Grande Gorge Visitor Center and Pilar within the NM 68 ROW on the east side of the highway. Approximately 5,000 feet (0.9 mile) north of BLM Visitor Center, the pipeline would be bored under the highway, follow the west side of the NM 68 ROW to an unnamed ephemeral side drainage west of the highway, and then turn west to follow the unnamed drainage. A new block valve would be constructed at the base of Taos Plateau before the pipeline climbs to the top of the plateau. The block valve location would be the transition point from the new 12-inch pipeline to the smaller 8-inch pipeline. The pipeline would then climb to the top of Taos Plateau following the general direction of the unnamed drainage. At approximately 2,600 feet from the NM 68 ROW, the pipeline would reach the project terminus at the existing pipeline ROW (see Figure 1.1). In total, Alternative D would be collocated with the NM 68 ROW for approximately 6.5 miles.

As part of Alternative D, an existing two-track road, measuring approximately 2,720 feet, would be improved to facilitate travel between the existing pipeline ROW on top of Taos Plateau and NM 68 at the northern end of the project (Figure 1.1). This new segment of improved access road would connect to the existing 2.8-mile NMGC pipeline road and together would provide permanent access for operations. No major improvements, such as widening or new surface material, would be needed for the existing NMGC pipeline road. Temporary culverts at some drainage crossings may be needed to accommodate construction vehicles, but these activities would be located within the existing, permitted ROW. Table 2.3 describes the Alternative D project area by land ownership.

Table 2.3. Alternative D: Acreages of Proposed ROW by Land Ownership

Project Element	Land Ownership	Total Proposed ROW (acres)	TUA (acres)	Permanent ROW (acres)
7.2-mile proposed pipeline re-route	BLM (5.7 miles)	58	18	40
	Private (1.5 mile)	8	4	4
Block valves	BLM	0.2	–	0.2
	Private	–	–	–
Staging areas	BLM	5	5	–
	Private	3	3	–
Access road improvements*	BLM (0.3 mile)	2.7	–	2.7
	Private (0.2 mile)	0.4	–	0.4
Total Acreage of ROW		77.3	30	47.3

* The existing NMGC pipeline access road on Taos Plateau is already permitted; therefore only the improved section of two-track used to connect the existing pipeline access road with NM 68 is provided in this table because a new ROW permit would be required.

Table 2.4 shows the surface disturbance, both temporary and permanent, associated with Alternative D. It is important to note that permanent disturbance was calculated based on the alignment located outside the NM 68 ROW.

Table 2.4. Alternative D Surface Disturbance Acreages by Land Ownership

Project Element	Land Ownership	Total Surface Disturbance (acres)	Temporary Surface Disturbance (acres)	Permanent Surface Disturbance* (acres)
7.2-mile proposed pipeline re-route	BLM (5.7 miles)	58	56.7	1.3
	Private (1.5 mile)	8	8	-
Block valves	BLM	0.2	-	0.2
	Private	-	-	-
Staging areas	BLM	5	5	-
	Private	3	3	-
Access road improvements	BLM (0.3 mile)	2.7	-	2.7
	Private (0.2 mile)	0.4	-	0.4
Total Acreage of ROW		77.3	72.7	4.6

* Permanent disturbance is calculated based on a 15-foot-wide permanent corridor directly over the pipeline, plus the permanent block valves and access road, located outside the NM 68 ROW.

As part of Alternative D, NMGC would relocate the regulator station in Pilar from its current location at the intersection of NM 570 and Dolores Road to a new location on NM 68, just north of the entrance to the BLM Rio Grande Gorge Visitor Center (see Figure 1.1). The purpose of the regulator station is to reduce the pressure of the natural gas being transferred from the transmission pipeline to the distribution pipeline, which serves homes within Pilar. One small segment of distribution pipeline, approximately 125 feet long, would need to be installed under NM 68 to connect to the existing residential distribution pipeline on the west side of NM 68, near the intersection of NM 68 and NM 570 (Figure 2.1 through Figure 2.3). The existing Pilar regulator station and block valve would be reclaimed by removing all aboveground facility components, recontouring the ground surface, and reseeding the areas to facilitate revegetation.

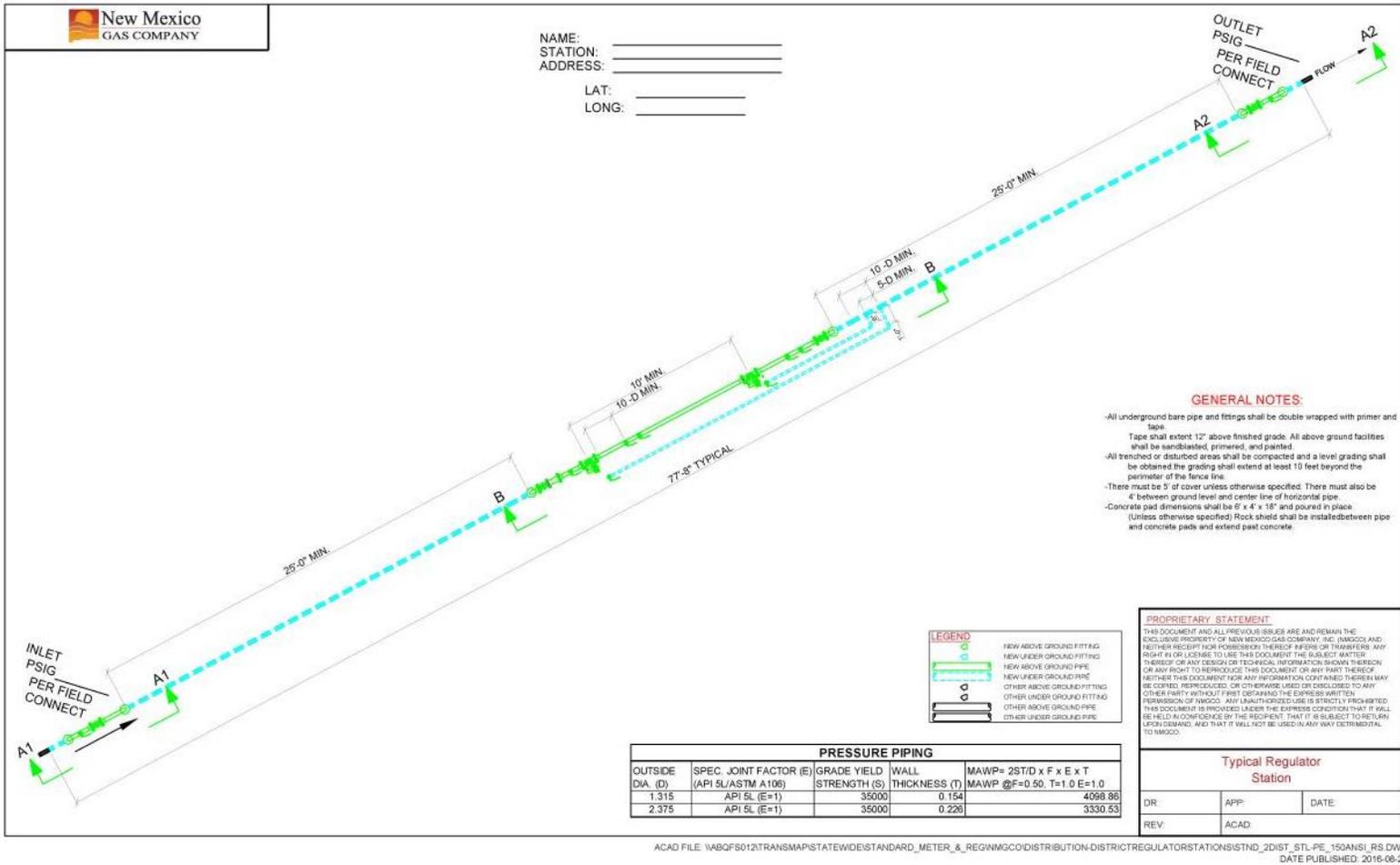


Figure 2.1. Plan view of typical regulator station

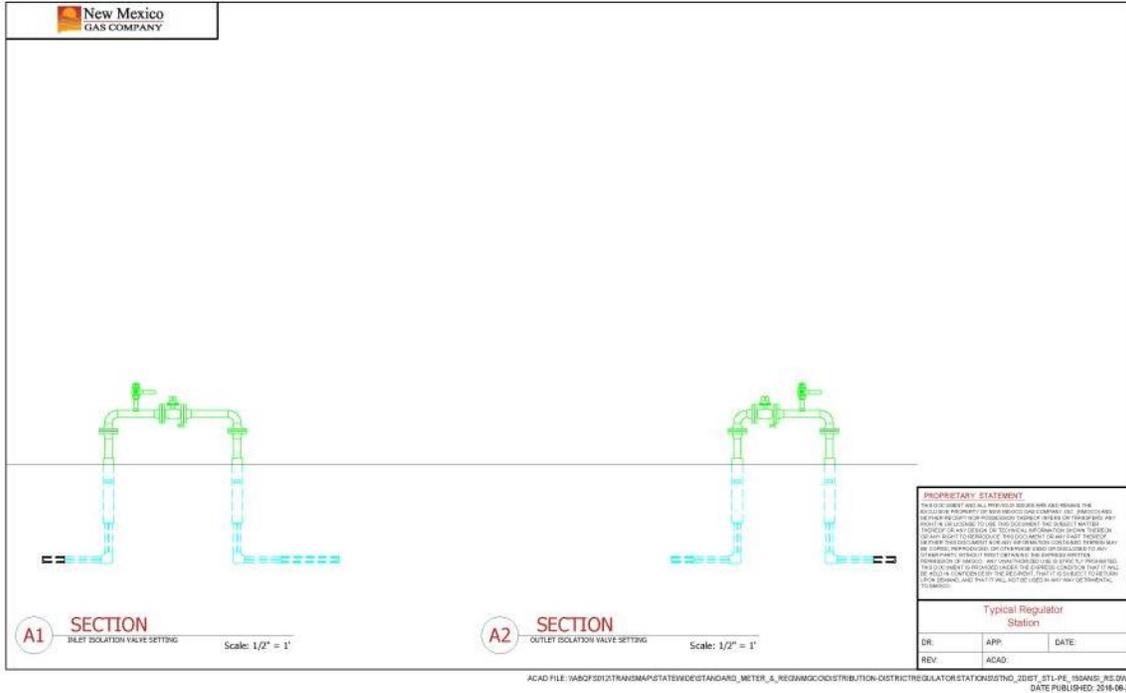


Figure 2.2. Profile view of typical regulator station

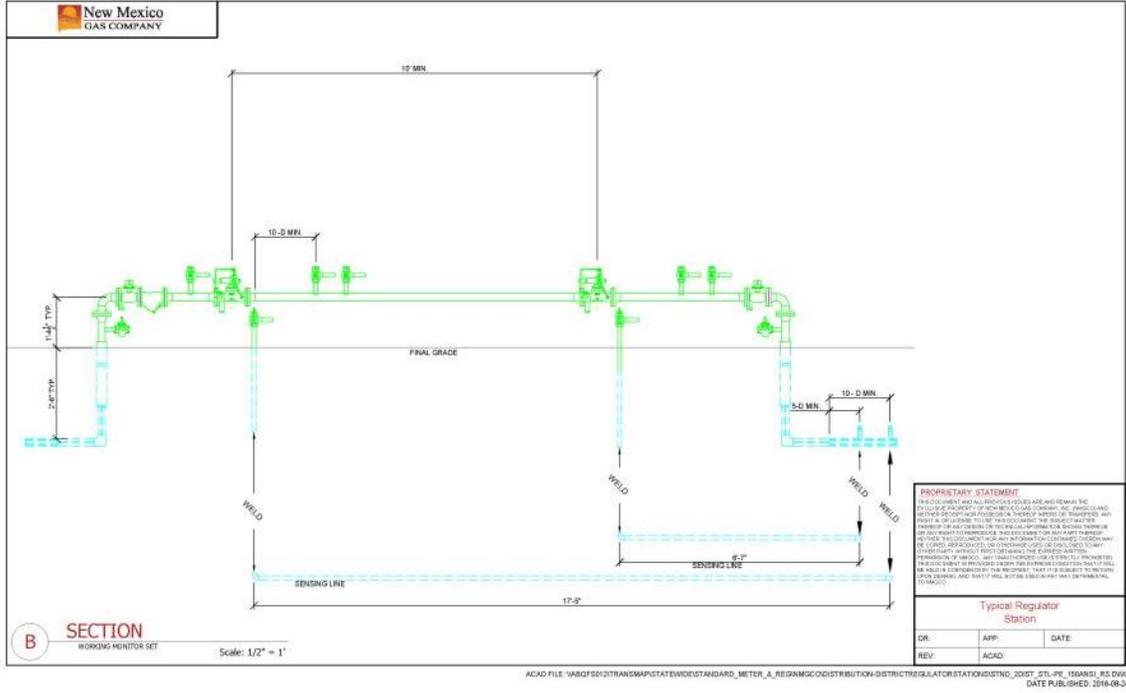


Figure 2.3. Profile view of typical regulator station

2.3 Project Elements Common to Alternatives A and D

Under both Alternative A and Alternative D, the existing 8-inch-diameter pipeline would be replaced with a 12-inch-diameter steel pipeline to accommodate future growth in Taos County. Both action alternatives include a request for a 50-foot-wide permanent ROW, a 25-foot-wide TUA, and staging areas. The following sections describe those elements common to both Alternatives A and D. In areas where there are slight differences between alternatives, a description of each alternative is provided.

2.3.1 Pre-construction Activities

If the BLM issues the ROW grants for the project, the Standard Form 299 and associated POD would be finalized with the project design details, including the associated Reclamation Plan, hydrostatic testing discharge permit, maps, centerline surveys, and pre-construction resource surveys. Finalized locations for temporary spoil pile and frac tank storage would also be determined with the BLM TFO.

Flagging and Staking the ROW

Surveying and station staking of the project route would include flagging or staking the boundaries and centerline at 100 to 200 feet intervals with painted laths or flags of a distinctive color. The centerline of the proposed route would be the suggested location for the pipeline and may change slightly if other utilities or natural obstacles are in conflict. The boundary stakes would be maintained until final cleanup and/or reclamation is completed, after which they would be removed. At a minimum, reference stakes for all angle stations would be set on both sides of the ROW corridor prior to construction activities. Bore locations would be staked at drainages and road crossing points. Exclusion fencing would be established around sensitive biological or cultural areas. These fences would be removed after reclamation.

Stormwater Pollution Prevention Planning and Installation

The applicant would file a Notice of Intent with the U.S. Environmental Protection Agency's (EPA's) National Pollutant Discharge Elimination System (NPDES) program prior to construction. Best management practices (BMPs) identified in the Stormwater Pollution Prevention Plan (SWPPP) would be installed prior to any ground disturbance associated with construction. The BMPs would be inspected throughout construction and repaired, as necessary.

Traffic Control on NM 68

Per the NMDOT requirements, a traffic control plan would be implemented along the NM 68 portion of the proposed pipeline re-route. The plan would address traffic concerns that may affect local communities and the through traffic to/from Taos. Prior to construction, all necessary construction zone signage, barriers, and other traffic control devices would be placed in the highway following the approved plan. Construction would be limited to 1-mile stretches of NM 68. One traffic lane would be closed using the appropriate traffic barrier along the centerline to keep construction crews safe. A pilot car and flagmen would be in operation 24 hours per day within the construction zone. Traffic delays during the peak travel time on NM 68 are expected to be approximately 10 to 15 minutes. The traffic control plan would be developed as part of the final POD and would be reviewed by the NMDOT.

2.3.2 Project Construction

Standard pipeline construction techniques would be used along the pipeline route, which typically involve the following: flagging and staking the ROW, BMP implementation for erosion control, clearing and grading, facility construction, and cleanup and restoration. The construction techniques described below would be used unless site-specific conditions warrant special construction methods. Construction of the pipeline would begin after all required federal, state, and local approvals are obtained. Construction activities are estimated to begin in August to avoid lane closures on NM 68 during winter periods when snow removal may be necessary. Construction is estimated to take approximately 120 days to complete.

Equipment required for construction of the proposed project would include, but is not limited to, construction trucks, heavy trucks, backhoes, dump trucks, trucks with trailers, directional bore equipment, cranes, trackhoes, frontend loaders, bulldozers, and water trucks.

Staging Areas

Equipment, pipe, and other construction materials would be transported from various parts of the country and stored at staging areas until needed. The pipe would be delivered by truck to the job site. Materials and equipment would be transported over NM 68. Hauling equipment would normally be restricted to daylight hours for public safety.

Four temporary staging areas would be required to construct either action alternative, requiring approximately 5 acres. The primary staging area on the south end of the proposed project area would be a small staging area established on BLM land adjacent to the Rinconada block valve, used primarily for parking and temporary pipe storage during the modifications to the facility. A second staging area would be placed in the previously disturbed rock quarry on BLM lands approximately 0.5 mile north of the Rio Grande Gorge Visitor Center. The third staging area would occur at the BLM overflow parking lot located approximately one mile north of the Rio Grande Gorge Visitor Center. Finally, a small staging area would also be required at the northern terminus of the re-route for construction of the tie-in of the re-route to the existing Taos transmission pipeline. Parking for the construction crew would also occur at the County Line recreation area. If needed, a fifth stage area would be located on 3 acres of private property on the south end of the proposed project area in Rinconada; however at this time, arrangements have not be secured to use this location as a staging area.

During construction, existing roads would be used as access. Under Alternative D, one existing two-track road would be improved on the north end to access the existing pipeline ROW on top of Taos Plateau.

Clearing and Grading

Clearing, grading, and other disturbances of soil and vegetation would be limited to the minimum area required for construction. Construction activities would be mostly staged from NM 68 pavement and vegetation clearing would be minimal due to the previously disturbed ROW from road construction, roadcuts, culverts, and bar ditches.

Both ends of Alternatives A and D cross lands that would require clearing of low vegetation and, in limited instances, rock. Near the Rinconada block valve, BLM land would require clearing and grading for the staging area near the block valve and the proposed pipeline would cross a portion of this staging area. At the northern end, both private and BLM land would require clearing and grading to remove low brush and small boulders.

Pipeline Trenching

After the work area is prepared, trenching operations would begin. The trench would be excavated with a trencher, trackhoe, or rock saw to excavate a ditch that has a minimum width of 24 inches. A backhoe or small trackhoe may also be used, particularly for bore pit locations. Trenches typically would be left open from 2 to 4 weeks to weld, test, and lower the pipe into place.

Escape ramps or plugs would be constructed every 300 feet to allow wildlife or other animals that might fall into the ditch to escape. For the portion of pipeline route located within NM 68 ROW, it is anticipated that no more than 5,000 feet of trench would be open at any one time. The depth of the ditch would vary with the conditions encountered; however, per industry standards, cover from the top of the pipe to ground level would be a minimum of 60 inches (5 feet). Burial depths would increase to 7 feet or more in the bored sections, such as where the pipeline would cross the Rio Grande and NM 68.

Horizontal Directional Drilling

Under both action alternatives, horizontal directional drilling (HDD) methods would be used to bore under NM 68 near southern and northern ends of the route (Figure 2.4) and under water bodies where necessary. Alternative A would require boring under the Rio Grande (Figure 2.5). HDD is a pipeline installation method typically used to avoid disturbance of sensitive surface features, including waterbodies and wetlands. Bore enclosures (pits) for boring would be built to contain the drilling fluid at the entry and exit points and would be monitored closely at all times. When near a water body, silt fences or other appropriate barriers would be installed above the water body. Prior to boring, the pipe would be strung out, welded, and x-rayed, and the coating would be electronically inspected on the surface before being pulled through the bore hole. After completion, the entry pit would be pumped free of any fluids and backfilled with surrounding soils, tamped with a backhoe, and graded. There is a potential for surface disturbance through an inadvertent release of drilling fluid, also known as a “frac out.” The release of drilling fluid can be caused by pressurization of the drill hole beyond the containment capacity of the overburden soil material, which allows drilling fluid to flow to the ground surface. NMGC would prepare a frac out plan to be followed at the job site during construction. The plan would identify best practices for prevention of a frac out and corrective actions to be taken if the release of drilling fluid occurs when HDD methods are used.

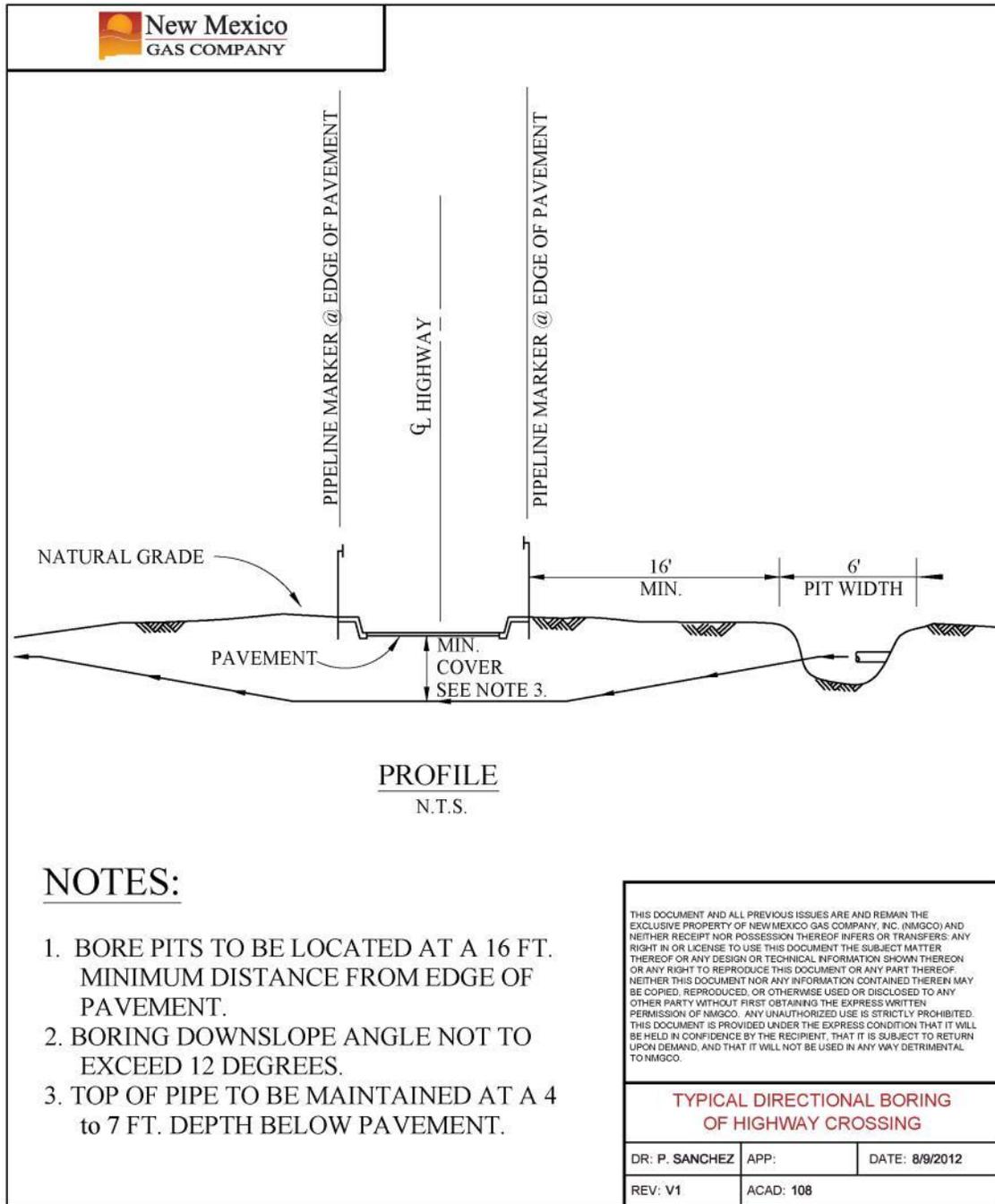
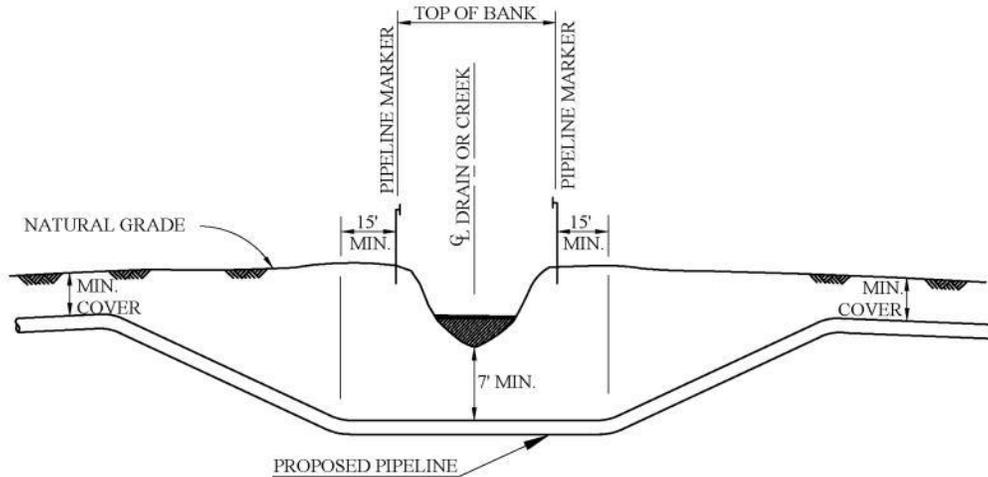


Figure 2.4. Schematic showing typical boring method for highway crossings.



PROFILE
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NOTES:

1. PIPE TO BE STRAIGHT FOR A MINIMUM DISTANCE OF 15 FT. BEYOND TOP OF EACH BANK, MEASURED AT RIGHT ANGLES TO CREEK OR DRAIN.
2. TOP OF PIPE TO BE MAINTAINED 7 FT. BELOW WATERCOURSE INVERT.
3. NORMAL FLOW OF DRAINAGE NOT TO BE OBSTRUCTED DURING PIPELINE CONSTRUCTION OPERATIONS.
4. AT MINOR CREEKS OR DRAINS NOT EXCEEDING A DEPTH OF 3 FT., CONTRACTOR MAY TRANSITION TRENCH AND LAY UNBENT PIPE TO MEET THE REQUIRED COVER.

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**TYPICAL CROSSING OF
CREEK OR DRAINAGE**

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DATE PUBLISHED: 2013-03-14

Figure 2.5. Schematic showing typical boring method for stream crossings

Lowering Pipe and Backfilling

The pipeline assembly would be lowered into the open trenches by means of two or more trackhoes or side boom tractors. If the trench bottom is rock, padding soil or rock shield material would be used to protect the pipe coating. The soil padding would be made up of clean, dry dirt. The coated pipe would be handled and lowered into the ditch using rubber tire cradles or wide nylon slings to prevent damage to coated pipe. Backfilling would start as soon as possible after the pipe is in the trench to prevent floating of pipe in case water enters the trench and to prevent damage to coating due to pipe movement caused by temperature changes. After the pipeline is padded, trench spoils would be hauled back and used as final fill.

Block Valve Construction

Under both alternatives, the existing Rinconada block valve, located on BLM land at the southwest terminus of the proposed re-route, would be relocated approximately 300 feet south of the existing location, within the existing pipeline ROW. Improvements would include the construction of an inline inspection tool launcher and receiver (Figure 2.6). These are aboveground tubes designed for launching and receiving individual cleaning and smart inline inspection tools. It would also be fitted with Supervisory Control and Data Acquisition (SCADA) equipment,

Under both Alternatives A and D, a new block valve, also fitted with the inline inspection facilities, would be constructed near the northern terminus of the re-route. Blowdown pipes, used to release natural gas prior to pipeline repairs, would be installed approximately 100 feet away from the block valve (Figure 2.7). Each block valve facility would be covered in gravel and enclosed by chain link fencing for security reasons. Under Alternative A, the new block valve would be located at the proposed pipeline intersection with the existing pipeline west of Pilar and would include SCADA equipment. Under Alternative D, the new block valve would be located near the base of Taos Plateau, along the segment of pipeline between the NM 68 highway ROW and the unnamed drainage where the pipeline would be routed to the top of Taos Plateau (Figure 1.1). Under either alternative, portions of the aboveground facility at the existing Pilar block valve would be disassembled and reused at the other locations.

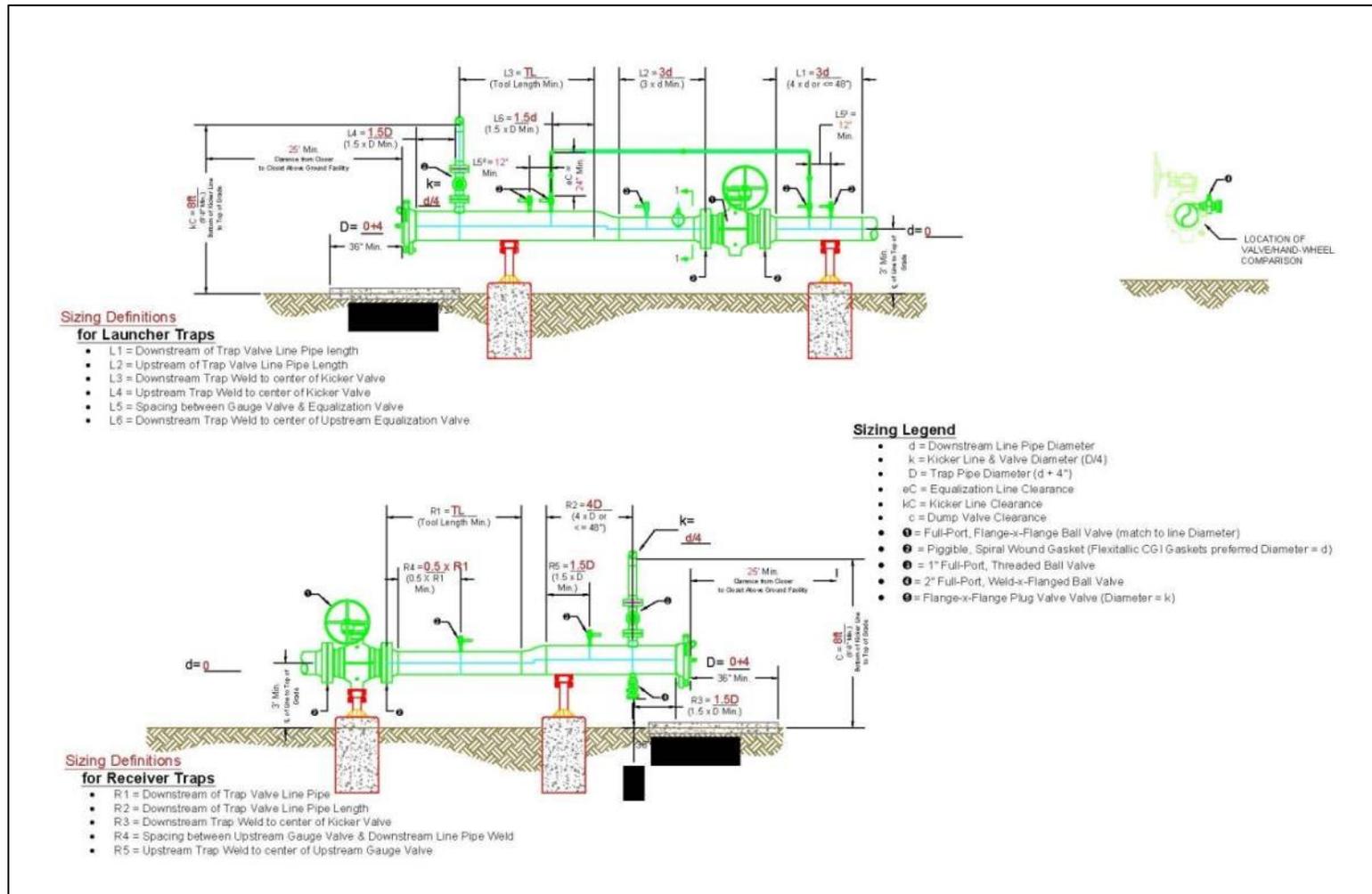
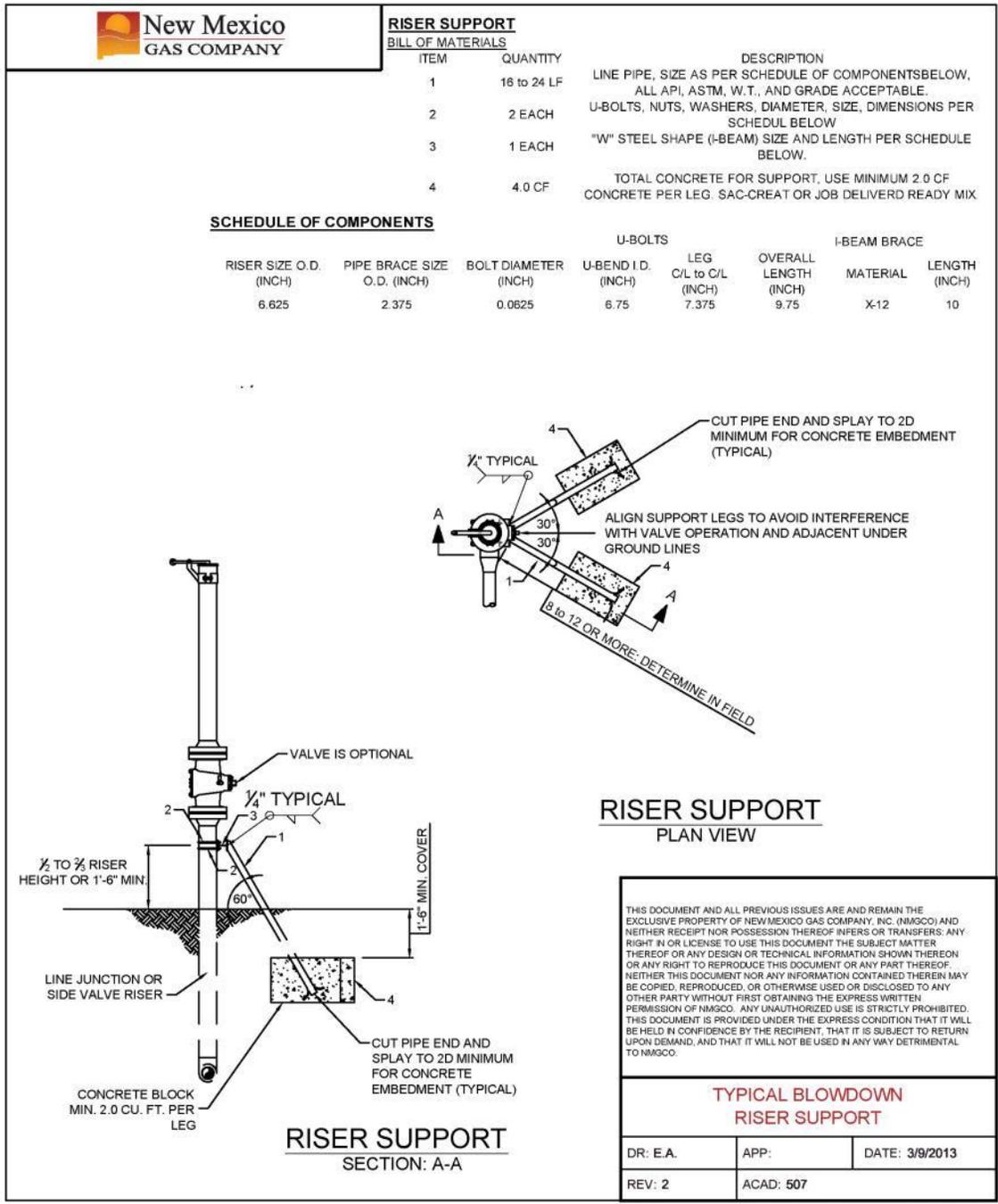


Figure 2.6. Typical block valve inline inspection launcher and receiver diagram.



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Figure 2.7. Schematic showing typical blowdown pipes to be installed near new block valve.

Hydrostatic Testing

Hydrostatic pressure testing of all newly constructed natural gas pipelines is required by CFR 49 192.620. Prior to pressure testing, air compressors and cleaning tools would be used to clean the pipeline of dust, dirt, rust scale, and all other foreign material. To reduce water usage, the new pipeline would be separated into two segments divided approximately the middle of the re-route. Under the conditions of the New Mexico Oil Conservation Division (NMOCD) permit, approximately 175,000 gallons of fresh potable water would be acquired from a municipal or other NMOCD-approved water source, transported to the pipeline or service yard, and held at the test site in 12 large tanks before and after the tests are conducted, which is estimated to be approximately 1 to 2 weeks. The tanks would be staged at the BLM Rio Grande Gorge Visitor Center parking area due to limited, adequately sized storage areas within the gorge. Hydrostatic testing is estimated to occur approximately 3 months after construction begins, which is planned to begin in August.

The pressure test involves monitoring the pressure and temperature inside the pipeline for a minimum of 8 hours at a predetermined pressure. The minimum test pressure would be 600 pounds per square inch gauge (psig) and the maximum is 1,967 psig. Any defect that fails a pressure test would be promptly addressed by repair or replacement.

Upon completion of the task, hydrostatic test wastewater would be sampled and analyzed for pollutants in compliance with NMOCD regulations in order to determine the proper disposal method. If approved by the NMOCD and the BLM, the hydrostatic wastewater would be discharged in a manner that prevents erosion or entry into or near existing drainages or waterways, in compliance with the permit issued by NMOCD. Otherwise, the water would be transported to injection wells approved by the NMOCD.

Commissioning of Pipeline

The test water would be removed from the pipeline and dried to a specified dew point prior to the commission of the pipeline. Air compressors would be used to push a series of foam pigs (cleaning devices) through the pipeline to collect all remaining water. Air dryers would be used to achieve the desired dew point. A stopple fitting would be used to tie into the existing 8-inch steel pipeline at Rinconada block valve and the new block valve on the north end of the proposed re-route. The pipeline would be purged of air using natural gas or a nitrogen slug.

Cleanup and Restoration

Cleanup and restoration would occur after the pipeline is installed and backfill activities are completed. Cleanup of the surface along the construction ROW would consist of the removal of construction debris and final grading to the finished contours. In addition, NMGC would develop a Reclamation Plan as part of the final POD. The Reclamation Plan would include site-specific restoration measures appropriate for the selected alternative, species to be planted, and monitoring requirements. The plan would combine NMGC's SWPPP and BMPs with site-specific mitigation developed in consultation with the BLM. Permanent erosion control measures would be installed and seeding would occur in accordance with BLM requirements (see Stabilization and Rehabilitation under Section 2.4 for detail regarding restoration steps).

Under both alternatives, cleanup and restoration activities would also include the removal of inactive segments of aboveground pipeline along the existing pipeline alignment.

2.3.3 Project Operation and Maintenance (Alternatives A and D)

Under both Alternatives A and D, the maximum operating pressure for the pipeline would be 400 psig, used year round and permanently. Regular inspections would be performed in accordance with the Pipeline Safety Act and NMGC's established policies and procedures for transmission pipeline inspections and maintenance. The pipeline and block valves would be inspected for leaks, corrosion, equipment misalignment, erosion, vandalism, and unrelated construction activity. The need for vegetation management would also be determined during inspection patrols.

Integrity Management Program Inspections

NMGC is required by 49 CFR 192, Subpart O, Pipeline Integrity Management Regulations, to conduct pipeline integrity assessments to assess and mitigate risks on gas transmission pipelines. Inline inspections provide the most accurate information on pipeline condition and are the least invasive means to analyze the condition of the pipeline. An inspection can be conducted along the pipeline multiple times with little to no earth-disturbing activities. The transmission pipeline segment must be reassessed at least once within a 7-year interval. After reviewing the data collected from inline inspections, inspections may occur at an increased frequency to address any ongoing safety concerns.

An inline inspection tool is an electronic instrument that passes through the pipeline internally, inspecting the inside of the pipeline and detects irregularities such as internal and external corrosion, changes in wall thickness, dents, gouges, and other pipe deformities. To perform an inspection, the inline inspection tool is inserted into the pipeline via the aboveground launcher. The pressure or flow of the natural gas in the pipeline propels the inline inspection tool through the pipeline to a receiver at the end of the segment being inspected. NMGC personnel would follow the inline inspection tool on the surface, via walking and rubber-tired vehicles, as it travels through the pipeline. If an inline inspection tool gets stuck, the pressure within the pipeline would be increased to push the inline inspection tool through. If necessary, approximately 60 feet of the pipeline would be excavated to access the inline inspection tool. Detected irregularities would be repaired to comply with applicable regulations and industry standards.

Inline inspections require a cleaning tool to pass through the system before the inline inspection tool. In some cases, liquid and solid waste is generated and collected using industry standard recovery methods. Disposal of any liquid and solid waste generated during maintenance and operation of the pipelines would be done at a state and/or federally approved facility. The Spill Response Plan, included in the applicant's POD, would be followed when dealing with possible pipeline spills and operations.

Federal pipeline safety standards are subject to change and additional hydrostatic pressure tests may be required in the future. In that event, one or two locations along the pipeline may be required to temporarily stage water tanks and mobile compressors during the tests. These locations could be up to 150 × 50 feet each in size and would be used for the brief testing duration.

Valve and Launcher/Receiver Maintenance

The inline valves would be maintained per the Gas Operations Manual and as defined in the minimum standards outlined in CFR 49 192.179. Block valves are installed as an appurtenance attached to the pipeline and can be adjusted to restrict, modify, regulate, control, or increase the amount of gas that passes through the pipeline. The two proposed block valves would require basic lubrication and possible replacement. Equipment needed to perform these tasks includes a truck and small tools.

Right-of-way Repair

Routine maintenance activities are ordinary tasks that have historically been performed and are regularly carried out. The work performed is typically repairing or replacing damaged or corroded pipe, re-taping damaged coatings, covering pipe exposed by erosion, or maintaining or replacing valves. Typically, a small crew undertakes the tasks using minimal equipment and usually the work is done in a few hours to a few days. Equipment required may include four-wheel drive trucks, backhoe or small trackhoe, and welder trucks. This work is prompted by the results of integrity management or other forms of inspections.

ROW repairs include grading or repair of existing maintenance roads and work areas, and spot repair of sites subject to flooding, scouring, or other erosion. Required equipment would include a grader, backhoe, four-wheel drive pickup truck, and a cat-loader or bulldozer. Repairs of the ROW would be scheduled as a result of line inspections or in response to an emergency situation.

Vegetation Management

NMGC must maintain the ROW for vehicle and equipment access necessary for operations, maintenance, and repair, including aboveground facilities such as valves, block valves, and Integrity Management Program equipment, as described by the Pipeline Safety Act. As needed, shrubs and other low vegetation would be cleared near facilities and along the service road to facilitate required inspections and maintenance of the transmission line and to ensure system reliability.

Vegetation would be removed using equipment such as chainsaws, weed trimmers, shovels, mowers, and brush hooks. The exception to this practice is in riparian and wetland habitats and on steep, rough terrain.. Vegetation maintenance in those areas would be conducted by hand and would be conducted using pedestrian access rather than driving in the area. Vegetation removal would occur on a 3- to 5-year cycle in non-nesting seasons.

Emergency Response

Routine operation and maintenance activities for the Taos Mainline would minimize the need for most emergency repairs; however, natural hazards such as landslides or major erosion events, fires, or human-made damage require emergency response. Such work is required to eliminate a safety hazard, prevent imminent damage to the system, or restore service in the event of an outage. In the event of an emergency, NMGC must respond as quickly as possible to reduce the threat of rupture or to restore power.

Equipment required to carry out emergency repairs is similar to that necessary to conduct routine maintenance in most cases. In rugged, inaccessible areas, emergency response to outages may require additional equipment such as bulldozers and trackhoes to complete the repairs. These areas would be subject to reclamation after repairs are completed.

2.3.4 Project Abandonment (Alternatives A and D)

Under both Alternative A and Alternative D, the proposed transmission re-route line would have a projected operational life of at least 50 years. If no longer required, the transmission line would be removed from service. At such time, the BLM Authorized Officer would be contacted to arrange a pre-termination conference and joint inspection of the ROW to agree on an acceptable abandonment plan. This would include, but would not be limited to, removal of all surface facilities and exposed pipe, as well as cleaning, plugging, and reclaiming any disturbed areas and service roads through stabilization and revegetation. All buried pipelines would be left in place. For BLM lands, the Authorized Officer must approve the plan in writing prior to the holder's commencement of any termination activities.

2.4 Project Design Features (Alternatives A and D)

The following applicant-committed environmental protection measures have been incorporated into the project design of the Alternatives A and D for the construction and operations phases to lessen or avoid impacts to resources. Throughout this document, these are referred to as design features. These features are organized below under the resource they are designed to protect, although some of the measures are designed to protect or mitigate impacts to multiple resources. This document also refers to BMPs, which are industry- or agency-recommended construction methods that are routinely implemented to minimize impacts to resources. Where practical, these BMPs have been incorporated into the proposed project's design features.

2.4.1 Air Quality

- Reasonably available control technology would be provided to prevent fugitive emissions from becoming airborne. These controls would be implemented 24 hours a day, 7 days a week during construction. Methods to reduce emissions would include trackout control devices at all site access points, erosion and sediment controls stipulated in the SWPPP, routine cleaning of paved areas for any mud tracking or soil erosion, use of water trucks on-site, minimization of areas of disturbance, vehicular speed limitation, water to minimize dust from on-site storage piles, and, if needed,

chemical stabilization. Federal, state, and local air quality standards would be met during construction and operation of the project.

2.4.2 Stabilization and Rehabilitation of Right-of-way

- NMGC would protect all survey monuments (General Land Office monuments, BLM Cadastral Survey Corners, military control monuments, or U.S. Coastal and Geodetic benchmarks and triangulation stations) found within the ROW corridor. Other monuments that may be present include recognizable civil survey monuments, reference corners, and witness points. In the event of obliteration or disturbance of any of the above, NMGC would immediately report the incident in writing to the BLM Authorized Officer and undertake mitigation of the damage.
- Reclamation would be staged and undertaken in conjunction with the SWPPP. It would occur no later than 2 weeks following the completion of construction in each segment of the route. Construction industry standard practices and BMPs would be used for the stabilization and vegetation restoration in areas disturbed by construction using measures approved in the Reclamation Plan. It would include BMPs for restoring surface flow conditions damaged by construction activities.
- If seasonal or weather conditions are not favorable, temporary erosion controls would be maintained until the area is revegetated. Surplus construction material and debris would be removed from the ROW unless otherwise approved. Fences and other existing infrastructure would also be returned to their pre-construction condition as approved by landowners and/or land management agencies.
- Temporary access roads and TUAs built during construction would be reclaimed.
- The Reclamation Plan procedures for reseeding the ROW would include reseeding measures and seed mixes appropriate for the existing plant communities. NMGC would collaborate with the BLM to determine the appropriate vegetation community and seed mix.
- Final reseeding would be conducted at the first appropriate growing season after completion of construction.
- Commercial seed would be certified weed free and would be used within 12 months of testing to assure seed viability. The seed mixture container would be tagged in accordance with state laws and available for inspection by the BLM.
- Seed would be applied by hydromulch application in rough topography or by a range type drill on more level terrain. When drilled, the seed would be placed in rows up to a maximum of 8 to 10 inches apart and at a depth of not less than 0.5 inch deep or more than 1 inch deep.
- Certified weed-free straw would be used for sediment or erosion control or as mulch applied after reseeding.
- Seed planting would be guided by the goal of having a ground cover on the disturbed areas that is at least 70 percent compared to the surrounding areas. Monitoring would continue as stipulated by the plan and include photo points.

2.4.3 Soils and Vegetation

- The construction ROW would be delineated and clearly marked to prevent accidental disturbance of any unnecessary acreage.
- A Reclamation Plan would be prepared that includes site-specific restoration measures, species to be planted, and monitoring. The plan would combine NMGC's SWPPP and BMPs with site-specific mitigation developed in consultation with the BLM.
- Reclaimed areas would be monitored annually until the project area is successfully reclaimed to determine the success of revegetation and the presence of invasive/noxious weeds. If weeds are found, the BLM TFO would be notified, which would determine the best method for the control of that particular weed species and the need for reseeding portions of the project area, if necessary.
- The project-specific Reclamation Plan would deal with occurrences of noxious weeds along the ROW, treatment of known noxious weed areas, and methods to minimize the spread and establishment of noxious weeds and non-native invasive species.

- To minimize the potential for introducing invasive weeds to the project area, all vehicles and equipment, including reclamation equipment, would be cleaned of soil and debris capable of transporting weed seed prior to beginning work in the ROW. All contractor vehicles would be inspected to ensure they have been cleaned properly. All vehicles, including off-road and all-terrain, traveling in or out of weed-infested areas would clean their equipment before and after use on public land.
- All seed, hay, straw, mulch, fill, gravel, or other vegetation material transported and used on public land for site stability, rehabilitation, or project facilitation would be certified noxious weed free of all reproductive parts upon the passage of a weed-free law in the state of New Mexico. Areas would be monitored to determine the success of revegetation and the presence of invasive/noxious weeds, and would be reseeded if necessary.
- Vegetation maintenance in riparian areas would be conducted by hand and would be conducted using pedestrian access rather than driving in the area, thereby minimizing impacts to riparian areas.

2.4.4 Water Resources

- All major drainages would be bored or the pipeline would be placed in fill above existing culverts to the greatest extent possible. If trenching across a potential jurisdictional waterway is necessary, NMGC would obtain a Clean Water Act (CWA) Section 404 permit prior to construction. To minimize potential impacts to surface water quality, NMGC would adhere to the project's SWPPP, U.S. Army Corps of Engineers (USACE) permits, and New Mexico Environment Department (NMED) water certification stipulations.
- NMGC would obtain a permit from the NMOCD prior to hydrostatic testing of the pipeline. Discharge of hydrostatic test water would comply with BLM requirements and the NMOCD permit.

2.4.5 Wildlife and Special Status Species

- BMPs outlined in the New Mexico Department of Game and Fish (NMDGF) Trenching Guidelines (NMDGF 2003) would be followed to minimize the potential for accidental mortality of trapped wildlife.
- Any vegetation removal during the breeding bird season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish avoidance buffers (as determined by the BLM TFO) until the young have fledged. NMGC would follow the nesting bird spatial and temporal restrictions provided in the BLM TFO RMP (BLM 2012) and the BA. These restrictions could be adjusted or waived by the BLM Authorized Officer on a site-specific evaluation.
- If construction activities occur within critical habitat during the migratory bird breeding season (April 15 through September 15), USFWS protocol surveys for southwestern willow flycatcher pre-construction presence/absence surveys would be conducted prior to construction activities taking place. If southwestern willow flycatchers are found nesting within the project area, a 0.25-mile buffer would be established around the nest. Additionally, if territories are established by flycatchers within the survey area, a 0.25-mile buffer is required upstream and downstream of said territory, per a USFWS Ecological Service Office Concurrence Memorandum (Cons #22420-2006-I-0112) issued for BLM TFO projects upstream of the project area in the Rio Grande Gorge Recreation Area.
- If a bald eagle (*Haliaeetus leucocephalus*) roost site is established within or near the project area prior to construction, NMGC would follow the BLM TFO RMP (BLM 2012) guidance of avoiding activities within a 0.5- to 1.0-mile buffer around an active nest between January 1 and August 31.
- When work is being conducted (e.g., removal of vegetation/soil), the following procedure would be followed to avoid adverse effects to bald or golden eagles: if an eagle is present within 0.25 mile upstream or downstream of the riparian work zone in the morning before project activity starts, or following breaks in project activity, project activity must be suspended until the bird leaves of its own volition. If eagles might be in the area, (perch or roosting site), a presence/absence survey must be done within a 0.25 mile radius of a project site before work activity initially starts for the day and again before work resumes following a break. If an eagle enters the construction zone during work activity the work activity can continue.

- Noise disturbance and management activities will be avoided or minimized within 1.0 mile of raptor nests during nesting and brood rearing period. Unoccupied raptor nests will be protected from removal or destruction, including a year-round protection of a 0.25-mile buffer of suitable habitat around any known occupied and unoccupied nests, following project-specific BLM guidance or the BLM TFO RMP (BLM 2012).

2.4.6 Cultural Resources

- If, in its construction or operation, the contractor or NMGC crews discover any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery would be suspended and the discovery promptly reported to the BLM. The BLM would then specify what action is to be taken. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act of 1979 (as amended).

2.4.7 Visual Resources

- NMGC would work with the BLM to ensure construction, operation, and maintenance of the pipeline, and associated aboveground facilities would be consistent with the objectives and guidelines of VRM Class II.
- Vegetation would be trampled/cut and existing vegetation would be retained where possible.
- Large limbs would be trimmed from existing vegetation within the ROW, and existing root systems would be left intact where possible to encourage regrowth and revegetation along the equipment passage and soil storage areas. Vegetation limbs and debris would be scattered over the ROW during reclamation.
- Surface boulders would be salvaged and relocated in the appropriate disturbance area similar to pre-construction conditions to minimize visual fragmentation.
- To facilitate reclamation of the ROW, contour trenching would be used to capture water and support the revegetation of the disturbed area.
- Reclamation would be implemented to disguise disturbance.
- Any aboveground portions of the pipeline and block valve facilities would be painted the appropriate color to blend with the landscape, as prescribed by the BLM.
- Vegetation removed during the initial clearing of the ROW would be crushed and pushed to the side. Upon completion of reclamation, that material and any rock previously displaced would be scattered back over the TUA to reduce erosion and to obscure the route.

2.4.8 Special Designations and Recreation

- Construction would occur to minimize impacts to commercial river rafting, to the greatest extent possible, while balancing traveler safety on NM 68 during winter months.

2.4.9 Travel and Access

- NMGC and the construction contractor will follow an NMDOT-approved traffic control plan for construction activities with the NM 68 ROW.

2.4.10 Livestock Grazing

- All fences and other existing infrastructure would be returned to their pre-construction condition as approved by the BLM and allotment permit holders.
- If construction requires temporary removal of fences, gates, or other barriers, temporary fencing would be placed in appropriate locations to protect grazing livestock from entering the pipeline trench.
- Any fence permanently crossed by the project would be replaced with a gate or cattle guard.
- Pipeline areas impacted during construction would be returned to their pre-disturbance state as soon as final construction is completed. Topsoil from the disturbed areas would not be stockpiled for more than 60 days and would be redistributed over the surface. Disturbed soil in construction

areas along the pipeline route would be prepared and amended as necessary in preparation for seeding with a native grass seed mix approved by the BLM and allotment permit holders.

- Weed-free straw or other suitable mulching material would be used during revegetation.
- The goal of the final reclamation is to 1) restore primary productivity of the site and establish vegetation that would provide for natural plant and community succession, and 2) establish a vigorous stand of desirable plant species that would limit or preclude the invasion of undesirable species, including non-native and noxious weeds.
- All construction areas would be graded to original contours following the construction period, thereby mitigating potential injuries to livestock from holes, ditches, and trenches. Surplus materials and debris from construction would be removed from the ROW.
- Livestock quarantine, removal, or timing limitations should be considered in invasive/noxious weed-infested areas.

2.4.11 Public Health and Safety

Construction Phase

- Construction activities would comply with U.S. Department of Labor, Occupational Health and Safety Administration (OSHA) regulations for excavations as defined in 29 CFR 1926, Subpart P, Excavation, with appendices.
- Other applicable federal and state regulations, including OSHA requirements and EPA regulations, would be followed during the construction of the pipeline.
- The Spill Response Plan would be followed when dealing with possible pipeline spills and operations.
- The pipeline is being designed and would be built in accordance with all applicable state and federal codes and regulations.
- The construction project area would be maintained in a sanitary condition at all times. Waste materials would be disposed of promptly at a state-permitted waste disposal site. "Waste" means all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil, petroleum products, filters, and welding rods or equipment. Disposal of all liquid and solid waste produced during the operation of the proposed BLM ROW grant would be done in an approved manner to minimize impacts to soil, water, vegetation, and wildlife. Portable toilets would be available on the work site.

Operation and Maintenance Phase

- The pipeline and aboveground facilities would be operated in a manner designed to protect the public and prevent accidents and failures.
- Pipeline facilities would be clearly marked at line-of-sight intervals and at crossings of roads, railroads, and other key points. The markers would clearly indicate the presence of the pipeline and provide a telephone number and address where a company representative could be reached in the event of an emergency or prior to any excavation in the area of the pipeline by a third party.
- Leak detection surveys are completed annually while general inspections of the transmission pipeline would be conducted semi-annually. Detailed ground inspections would take place using 4 × 4 trucks or all-terrain vehicles. In particularly rugged terrain, the pipeline would be walked. The inspector would assess the condition of the pipeline and valves to determine if any components need repair or replacement or if other conditions exist that require maintenance.
- The operation of Taos Mainline is remotely managed and monitored from control rooms in the NMGC operation center in Albuquerque. Major leaks or ruptures of the lines would be sensed and reported at the center. Additionally, strain gauges are placed along lines where soils movement causes stress on the pipe. Typically, as soon as an incident is detected, the control room dispatchers would notify the responsible operations staff in the area affected and crews and equipment would be organized and dispatched to respond to the incident.

2.5 No Action Alternative

BLM NEPA Handbook H-1790-1 states that for EAs on externally generated applications, the No Action Alternative generally means the request for the proposed activity would be denied (BLM 2008:52). This option is provided in 43 CFR 3162.3-1(h)(2). The No Action Alternative is presented for baseline analysis of resource impacts in Section 4: Environmental Consequences.

Under the No Action Alternative, NMGC would not be granted the requested ROW, the Taos Mainline would not be re-routed or upgraded, and the associated surface disturbance would not occur. A new block valve would not be built on the north end of the project area. The Rinconada block valve would be upgraded to accommodate the inline inspection tool launcher and receiver to be in compliance with Federal pipeline safety regulations. Inspection of the pipeline would continue to occur via visual inspection of the existing pipeline ROW and the pipeline stress gauges installed at six locations on the Taos Mainline within the landslide deposits. Repairs of the pipeline and routine ROW maintenance would occur as needed.

2.6 Alternatives Considered But Eliminated from Detailed Analysis

Alternatives to the Proposed Action are developed to explore different ways to accomplish the purpose and need while minimizing environmental impacts and resource conflicts and meeting other objectives of the RMP. Consistent with BLM NEPA Handbook H-1790-1, the agency “need only analyze alternatives that would have a lesser effect than the proposed action” (BLM 2008:80). Those with greater adverse resource impacts are not considered for this analysis.

Two alternative alignments for the proposed project were considered by NMGC and the BLM. One alternative, named Alternative B, considered re-routing the pipeline along the west mesa top of the Rio Grande Gorge and was presented to the public during scoping in late 2014. Under Alternative B, the pipeline route would begin at the Rinconada block valve and cross the Rio Grande south of the County Line boat takeout site. The pipeline would be anchored to rock on the gorge slopes to reach the mesa top, laid in a trench on the mesa top, and then anchored to rock on the gorge slope to tie into the existing Taos Mainline south of Pilar (Figure 2.8). This alternative involved lands managed by the BLM, the Carson National Forest, the New Mexico State Land Office, and private landowners. Alternative B was eliminated from detailed analysis due to the greater resource impacts associated with routing the pipeline along the gorge walls at two locations.

The second alternative eliminated from detailed analysis included replacing the pipeline within the existing ROW, previously labeled as Alternative C (Figure 2.8). Due to the environmental constraints along the existing pipeline, primarily the ground instability within the landslide areas and the depth to bedrock, this alternative was considered technically infeasible. NMGC considered constructing portions of the pipeline above ground where the ground has been prone to shifting; however, the foundations in these areas would need to be anchored to bedrock to prevent future movement of the pipeline. Investigations completed in 2015 by NMGC were unable to measure the depth to bedrock in compromised areas due to equipment limitations. This investigation used typical geotechnical boring equipment, which proved inadequate to reach the depths necessary to find bedrock. NMGC did not pursue further, more intensive geotechnical investigations along Alternative C in an effort to minimize resource impacts that could have resulted from transporting and using larger equipment on the west side of the Rio Grande. Based on these geotechnical exploration results and existing geological information available for the project area (Muehlberger 1979; Manley 1984; Haneberg et al. 1992; EA Engineering, Science, & Technology, Inc. 2014), reconstructing the pipeline within the existing ROW has been determined technically infeasible.

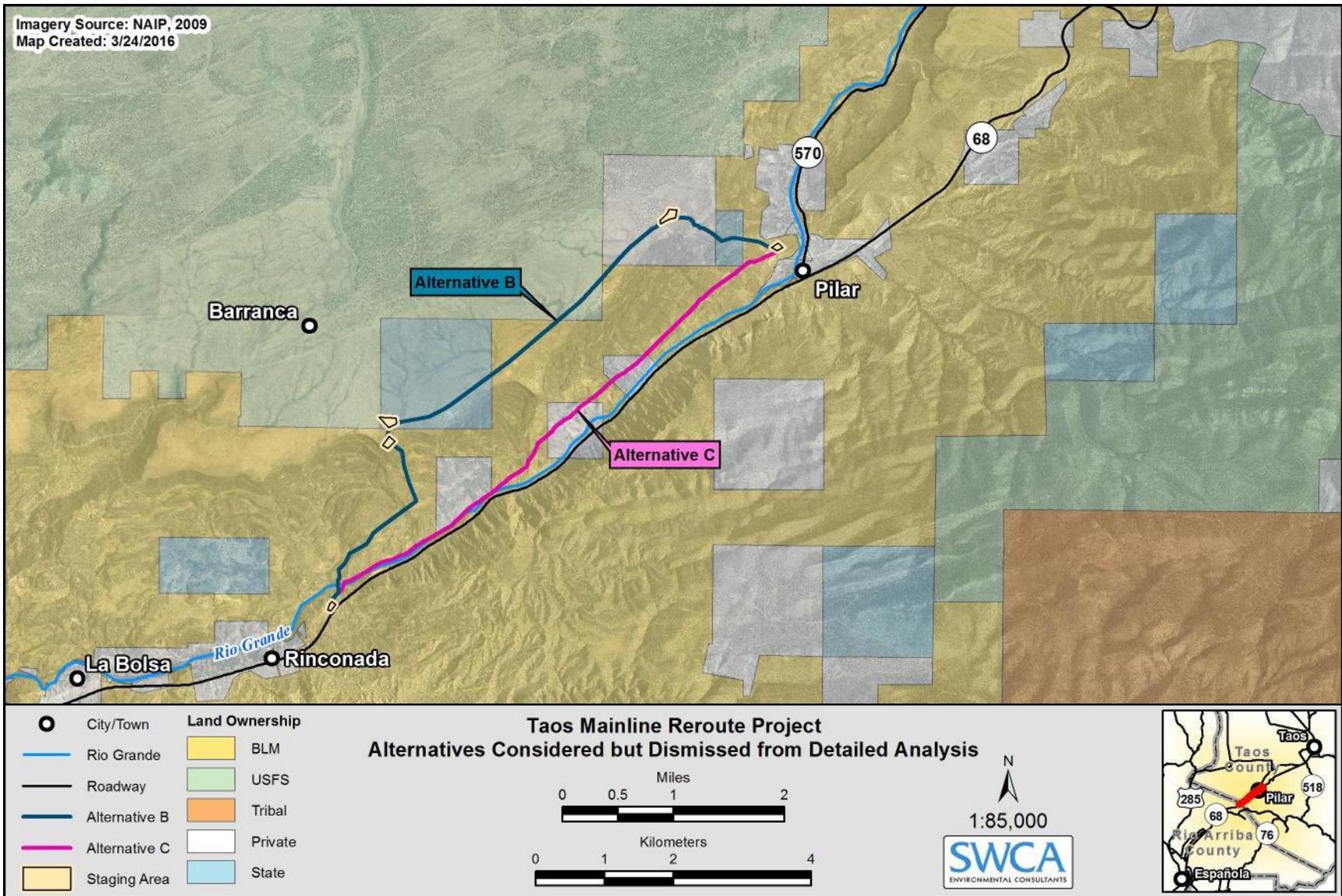


Figure 2.8. Alternative routes considered but dismissed from detailed analysis.

3 AFFECTED ENVIRONMENT

This chapter describes the environment that would be impacted by implementing the alternatives described in Section 2. The resource issues under analysis, and those dismissed from detailed analysis, are identified in Section 1. Aspects of the affected environment described in this chapter focus on the relevant major resources or issues/concerns. NEPA requires the discussion of issues and concerns are commensurate with the potential impacts: “1500.4(c) impacts shall be discussed in proportion to their significance.” On the basis of Council on Environmental Quality guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources that could be impacted to a degree that detailed analysis is warranted. The following analysis includes soils, water resources, cultural resources, vegetation and invasive species, wildlife and special status species, visual resources, special designations and recreation, livestock grazing, travel and access, and public health and safety, as presented in Section 1.4

3.1 Soils

The elevation of the project ranges from approximately 5,094 to 6,995 feet above mean sea level (amsl). The climate for this area, based on the climatic records for Taos, New Mexico, has an average annual maximum temperature of 63.6 degrees Fahrenheit (°F), with an average annual minimum temperature of 31.0°F. The average annual precipitation is 12.35 inches with the majority occurring between May and October, while the average annual total snowfall is 29.5 inches, which largely occurs between November and April (Western Regional Climate Center 2015).

Largely located within the Taos Plateau and the Upper Rio Grande Basin, the project area soils consist of large amounts of alluvial/eolian sediments interspersed with rocky outcrops of volcanic origin. This is due mainly to the nature of the Rio Grande and the surrounding geological and environmental areas that are related to volcanic activity along the Rio Grande Rift. Within this landscape several factors contribute to the deposition of fine silty sediments, such as local geology, topography, and annual precipitation. The local geology primarily is composed of the Santa Fe Formation, which through erosion and temporal degradation contribute to sediment deposition of the area (U.S. Geological Survey [USGS] 2011). Other factors include the great range of topography in the area coupled with the right amount of yearly precipitation and heavy monsoon episodes for creating and depositing sediments alluvially. The project area consists of many different soils and soil associations (Table 3.1).

Table 3.1. Soils in the Project Area

Soil Type	Alternative A (Percent)	Alternative D (Percent)	Erosion Factor K_w	Soil Description (abridged)
Chita loam, 0 to 5 percent slopes	3%	2%	0.37	This soil is well drained and formed in eolian and alluvial sediments derived from igneous rocks and sandstone. Chita soils are on mesas. It is non-irrigated land capability subclass 6c. This component is not a hydric soil.
Yarts sandy loam, 1 to 4 percent slopes	9%	7%	0.17	This soil is well drained and formed in eolian material and alluvium derived from sandstone, quartzite, and shale. Yarts soils are on structural benches, terraces, hills, alluvial flats, and fans. This component is not a hydric soil.
Florita-Rock outcrop complex, 15 to 45 percent slopes	less than 1%	less than 1%	0.24	This soil is well drained and formed in coarse-textured alluvium derived from sandstone and shale. Florita soils are on hills and valley sides. This component is not a hydric soil.

Soil Type	Alternative A (Percent)	Alternative D (Percent)	Erosion Factor K _w	Soil Description (abridged)
Tinaja-Rock outcrop complex, 45 to 75 percent slopes	10%	5%	0.24	This soil is well drained and formed in gravelly alluvium and colluvium. Tinaja soils are on hilly convex river terrace remnants, cuestas, and mesas. This component is not a hydric soil.
Fruitland sandy loam, 3 to 5 percent slopes	1%	1%	0.28	This soil is well drained and somewhat excessively drained. The soil formed in eolian material and moderately coarse textured alluvium and stream alluvium derived from sandstone and shale. Fruitland soils are on stream terraces on valley floors, alluvial fans on valley sides, and summits of mesas. This component is not a hydric soil.
Chimayo-Rock outcrop complex, very steep	21%	6%	0.32	This soil is well drained and formed in colluvium over residuum derived from granite, gneiss, and schist. Chimayo soils are on back slopes of escarpments and canyons. This component is not a hydric soil.
Orthents-Badland association, very steep	49%	53%	0.10	Orthents are soils that lack horizon development due to steep slopes or parent materials that contain no permanent weatherable minerals. Orthents are exceedingly shallow soils and are typically found on very steep slopes where erodible material is rapidly removed by erosion. This component is not a hydric soil.
Orthents-Rock outcrop association, very steep	5%	4%	0.10	See description above.
Petaca-Prieta complex, 1 to 8 percent slopes	0%	21%	0.17	The soils is well drained and formed in eolian material and alluvium weathered from basalt and other materials. The soil is on undulating uplands, basalt flows, and mesas. This component is not a hydric soil.
Silva-Sedillo association, gently sloping	0%	3%	0.32	The soil is well drained, moderately slowly permeable and formed in a mixed alluvium and eolian sediments. These soils are on bajadas, piedmonts, fan terraces, upland fans, stream terraces, and valley fill containing basalt fragments. This component is not a hydric soil.
Vibo sandy loam, 3 to 10 percent slopes	4%	0%	0.24	This soil consists of well drained materials derived from old mixed alluvium. They are found on old alluvial terraces several hundred feet thick on slopes ranging from 5% to 15%. This component is not a hydric soil.

The major soil types found in the project area as summarized in the above table are sensitive soils, developed from eolian (windblown) and alluvium parent material. They can be best characterized as loamy to sandy soils with medium textures and rocky outcrops. Erosion factors, shown in the table as the K_w factor, range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The majority of soils in the project area are moderately (0.25–0.45) susceptible to erosion due to the texture of the soils. When vegetation cover is removed, these soil types become highly susceptible to erosion (Natural Resources Conservation Service 2016).

3.2 Water Resources

The proposed project area is located within Upper Rio Grande Watershed (Hydrologic Unit Code [HUC] 13020101) and a WSR segment of the Rio Grande. The proposed project is located in proximity to the Rio Grande; however, as stated in Section 2, the majority of the proposed project parallels existing disturbance associated with the existing NM 68 ROW.

3.2.1 Wetlands

During the 2014 and 2015 field surveys, biologists identified a total of five wetlands within the survey corridors (SWCA 2015). Using the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979), all five wetlands were classified as Palustrine Emergent (PEM). Of the five wetlands, four occur along Alternative A and one occurs along Alternative D.

During the 2014 and 2015 field surveys, potential springs and/or seeps were identified within the wetlands connected to the riparian woodland vegetative community type associated with the Rio Grande. The riparian woodland vegetative community is described further in Section 3.4, Vegetation and Invasive Non-native Species.

3.2.2 Waterways

During the 2014 and 2015 field surveys, biologists identified a total of 37 waterways within the survey corridors. Of the 37 waterways, one is a perennial stream (Rio Grande) and the remaining 36 are ephemeral streams. Of these 37 waterways, 16 are crossed by both Alternatives A and D, three are crossed by Alternative A only (including the Rio Grande), and 18 are crossed by Alternative D only.

The Rio Grande is a perennial river, with streamflow highly dependent on snowmelt runoff and groundwater recharge. The NMED (2012) *Water Quality Survey Summary for the Upper Rio Grande Watershed* has identified the section of the Rio Grande adjacent to the proposed project area as fully supporting livestock watering, primary contact, irrigation, wildlife habitat, and aquatic life. Using streamflow data from a USGS (2016) site located below Taos Junction Bridge near Taos, New Mexico (08276500), the monthly mean streamflow for the Rio Grande in the general proposed project vicinity is provided in Table 3.2.

Table 3.2. Monthly Mean Streamflow for Rio Grande in Proposed Project Vicinity

Month	Mean Streamflow (cubic feet per second)
January	486
February	539
March	694
April	663
May	1,160
June	1,170
July	631
August	392
September	352
October	404
November	496
December	470

Source: USGS 2016 (January 1, 1995 to January 31, 2015)

3.3 Cultural Resources

Several federal laws and implementing regulations apply to the evaluation and protection of significant cultural resource properties and preservation of cultural standards. Among the most significant of these laws and regulations are:

- NHPA, Section 106, as amended (16 United States Code [USC] 470, Executive Order [EO] 13007);
- NRHP (36 CFR 60);
- Protection and Enhancement of the Cultural Environment, 1971 (EO 11593);
- American Indian Religious Freedom Act Amendments of 1978, as amended (42 USC 1996, 43 CFR 7);
- Archaeological Resources Protection Act of 1979 (16 USC 470aa-47011, 43 CFR 7); and
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001, 43 CFR 10).

Management of cultural resources on BLM lands is determined by policy directives contained in the TFO RMP (BLM 2012), as amended. The BLM makes land use decisions that could limit access or require alterations to the Proposed Action to minimize impacts to cultural resources.

Prior to the survey fieldwork, SWCA conducted record searches both at the Archaeological Records Management Section (ARMS), the New Mexico Historic Preservation Division (HPD), the NRHP, and the BLM TFO. Database records were searched for previously recorded archaeological sites, previously conducted archaeological surveys, NRHP and State Register of Cultural Properties sites, and homesteads within 0.25 mile of the project area.

Results of the records searches showed that 18 previous investigations and 16 previously recorded sites had been identified within 0.25 mile of the project area. The previous investigations identified a total of 91 archeological sites, including a mix of structural sites (sites with features) and non-structural sites of unknown/prehistoric affiliation, historic artifact scatters and historic structures, and multicomponent sites (Trowbridge et al. 2016).

SWCA conducted a cultural resources survey from May 7 to 14, June 9 to 13, and September 24 to 26, 2014, August 5 to 8, 2015, and November 7, 2016. A 100 percent (intensive) pedestrian survey was conducted by four permitted individuals walking parallel transects spaced no more than 49 feet apart. This cultural resources survey investigated 18 cultural properties—four previously recorded archaeological sites, 12 newly recorded archaeological sites, one not relocated site, and one historic bridge. Of these sites, 12 are recommended eligible for the NRHP (Table 3.3). LA 154897, of unknown culture/chronology, was not relocated during the field investigation and is probably poorly located. Thirty nine isolated manifestations, recommended not eligible for the NRHP, were also discovered during this investigation, scattered throughout the project area.

Table 3.3. Eligible Cultural Resource Sites Investigated during the Class III Survey

LA/HCPI No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Land Ownership	Associated Alternative*
LA 5182	Village of Pilar; Spanish Colonial–Recent (A.D. 1539–present)	Unknown	Private	D
LA 13237	Structural; petroglyphs; unspecified prehistoric (<A.D. 1550) and Hispanic unspecified historic (> A.D. 1550)	Criteria A and D	BLM, private, NMDOT ROW	D
LA 131445	Artifact scatter with features; unspecified prehistoric (A.D. 9500 B.C.–A.D. 1959), Hispanic (A.D. 1539–present), and Hispanic or Anglo (circa A.D. 1959)	Criterion D	Private	D

LA/HCPI No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Land Ownership	Associated Alternative*
LA 154897 (not relocated)	Artifact scatter; unknown (no file on record with BLM TFO or ARMS) – probably poorly located	Unknown	BLM	D (outside APE)
LA 158065	Abandoned historic acequia; Hispanic: unspecified Historic (A.D. 1540–1980); Anglo/Euro-American: Statehood–WWII through modern (A.D. 1930–1990)	Criteria A and C	BLM	A (outside APE)
LA 180696	Rock art; unknown aboriginal; Hispanic: unspecified historic (A.D. 1539–1950)	Criteria A and D	BLM	A, B, No Action
LA 180697	Rock art; unknown affiliation: unspecified historic (>A.D. 1550)	Criterion A	BLM	No Action
LA 180698	Rock art; unknown aboriginal: unknown prehistoric or historic	Criterion A	BLM	No Action (outside APE)
LA 180699	Rock art; unknown aboriginal: unknown prehistoric or historic	Criterion A	BLM	No Action
LA 180702	Rock art; unknown affiliation: Early Archaic through U.S. Territorial	Criterion A	Private	No Action (outside APE)
LA 180703	Artifact scatter with features; unknown aboriginal: Archaic through protohistoric (5500 B.C.–A.D. 1600); Anglo/Euro-American: U.S. Territorial through Statehood–WWII (A.D. 1880–1930)	Criterion D	Private	B
HCPI 36835	Abandoned historic wooden bridge; constructed ca. 1930	Criteria A and C	Private	A and D (outside APE)

*Because Alternative B is not carried forward for detailed analysis, LA 180703 is not discussed further.
APE = area of potential effect.

Full site descriptions are provided in the cultural resource inventory report developed for this project (Trowbridge et al. 2016) and in the Addendum report (Carlson et al. 2016).

3.3.1 Old Spanish National Historic Trail (also called the Apodaca Trail)

The Pilar area at the northeastern end of the project area has long been a focal point of transportation, with trails crossing the relatively wide confluence of the Rio Grande Gorge and the Rito Cieneguilla. North and south of the Pilar area, the gorge is narrow and deep. Hawk (2005:5) succinctly characterizes the situation as follows based on the results of his and others' considerable documentary and on-the-ground research:

Cieneguilla was clearly an important strategic location. For early pueblos, control of it would have been a commercial and military necessity. It was a crossroads for many Indian trails. It was an excellent camping and resting place, with water and some pasture. It was on the Rio Grande. Perhaps most important for early Spanish communications, it was one of the two main gateways to Taos from the south.

Hawk (2005:4; parentheses in original, brackets added) provides this summary description of the Embudo Pass Road and the Apodaca Trail at its northern end, followed by descriptions from historical documents spanning the Spanish Colonial, Mexican, and American Territorial periods, as well as archaeological (on-the-ground) observations:

The first trail ran from Velarde (then called La Joya [“the jewel” in Spanish]) northeast over a mountain ridge to Embudo Plaza (now Dixon). It then continued northeast from Dixon over what Helen Blumenschein [1968] called Apodaca Pass. It dropped steeply into the Agua Caliente Canyon just east of Pilar, and proceeded northeast up Cieneguilla Creek. It then climbed over the

ridge where the “horse shoe” of present Highway 68 is now located, went to Los Cordovas, with a branch to Ranchos, and eventually to Taos pueblo. This trail was usable most of the year. It was the shortest and most direct road [prior to the *Camino Militar* of the 1870s; see below] from the upper Rio Grande pueblos and Santa Fe to Taos valley. It was very heavily used by Indian, Spanish, Mexican and American traders, and was likely considered one branch of the Camino Real north from Santa Fe. But, until 1876, travel over it was by foot and pack trains; most of it could not be used by even light wagons.

Agua Caliente Canyon runs southeast-northwest and empties into the Rito Cieneguilla at the north end of the community of Pilar about 2,953 feet east of the northeast end of this project area. The Apodaca Trail, named by Blumenschein (1968:12–13) because it passed through the small community of Apodaca east of Dixon and southeast of Rinconada, then over Apodaca Pass southeast of Pilar, descended Agua Caliente canyon to its confluence with the Rito Cieneguilla. It then turned northeast up the Rito Cieneguilla following approximately the route of the *Camino Militar* and the modern route of NM 68. Hawk (2005:40–44) describes the frustrations of identifying the various iterations of the Apodaca Trail, what might have been its prehistoric and early historic Native antecedents, and the later historic roads and highways from Pilar up the Rito Cieneguilla, across the Arroyo Hondo canyon, and on to Taos.

The official trail route for the Old Spanish National Historic Trail comes closest to the proposed Alternatives A and D in two places: 0.66 mile southeast of NM 68 in a constricted canyon approximately 4.6 miles southwest of the Rio Grande Gorge Visitor Center and 0.75 mile southeast of the Alternative D pipeline route from NM 68 upslope to the unnamed mesa containing a portion of the Rio Grande del Norte National Monument. This alignment is identified on the National Historic Trails & Routes mapserver maintained by the National Park Service. The trail location has not been recorded as an archaeological site and has not been ground-truthed for positive identification. The official route of the Old Spanish National Historic Trail is clearly misplotted in the vicinity of Pilar, traversing extremely steep slopes. It is likely that the trail was on or closely parallels NM 68 or its vicinity; however, the official route is used when considering direct and indirect effects (Merrill Dicks, BLM TFO, personal communication 2015).

Administration of the trail falls under the Secretary of the Interior, including maintenance and development of the trail on federal lands. Under the National Trails System Act (P.L. 90-543 [16 USC 1241-1251] as amended through P.L. 106-509, November 13, 2000), Section 7 (16 USC 1246) the Secretary of the Interior “shall provide for the development and maintenance of such trails within federally administered areas, and shall cooperate with and encourage States to operate, develop, and maintain portions of such trails which are located outside the boundaries of federally administered areas.” No evidence of the Old Spanish National Historic Trail was identified within the current project area; therefore, the trail was not recorded as a part of the cultural resource survey for the proposed project.

3.4 Vegetation and Invasive Non-native Species

The proposed project area is in the Great Basins Coniferous Woodland community (Brown 1994; Brown et al. 2007) and the Taos Plateau EPA Level IV ecoregion (Griffith et al. 2006).

Vegetation in the survey area is typical of the Taos Plateau ecoregion, which consists of big sagebrush (*Artemisia tridentata*) shrublands with winterfat (*Krascheninnikovia lanata*), rubber rabbitbrush (*Ericameria nauseosa*), broom snakeweed (*Gutierrezia sarothrae*), western wheatgrass (*Pascopyrum smithii*), blue grama (*Bouteloua gracilis*), galleta (*Pleuraphis* sp.), alkali sacaton (*Sporobolus airoides*), and sand dropseed (*S. cryptandrus*). Scattered twoneedle piñon (*Pinus edulis*) and oneseed juniper (*Juniperus monosperma*) trees are also present within the sagebrush shrublands of this ecoregion.

During 2014 and 2015 field surveys, biologists identified two vegetative community types (piñon-juniper woodland and riparian woodland) along Alternative A and one vegetative community type (piñon-juniper woodland) along Alternative D (SWCA 2016); these two communities, including dominant plant species identified during the field surveys, are described below. Within these vegetative communities, the majority of the proposed project parallels existing disturbance associated with the existing NM 68 ROW. The two vegetative community types, including all of the plant species identified during the field surveys and representative photographs, are described in greater detail in the BA.

The piñon-juniper woodland vegetative community type is dominated by twoneedle piñon, oneseed juniper, and big sagebrush. The herbaceous layer is dominated by blue grama, scorpionweed (*Phacelia* sp.), cheatgrass (*Bromus tectorum*), tree cholla (*Opuntia imbricata*), and white-flowered gilia (*Ipomopsis longiflora*). This vegetative community occurs along the canyon walls and slopes west of the Rio Grande and west of NM 68.

The riparian woodland vegetative community type is dominated by narrowleaf cottonwood (*Populus angustifolia*), Rio Grande cottonwood (*P. deltoides* ssp. *wislizeni*), New Mexico olive (*Foresteria neomexicana*), coyote willow (*Salix exigua*), various sedges (*Carex* sp.), Baltic rush (*Juncus arcticus* ssp. *balticus*), broadleaf cattail (*Typha angustifolia*), and saltcedar (*Tamarix chinensis*). This vegetative community occurs along the Rio Grande and sparingly along NM 68. Within this community and within the field survey area, boulders and rocks line the banks of the Rio Grande.

3.4.1 Invasive Non-native Species

The Federal Noxious Weed Act of 1975 and Plant Protection Act of 2000 establish a federal program for controlling the spread of noxious weeds. Under the Plant Protection Act, noxious weeds are defined as “any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment.” The U.S. Department of Agriculture (USDA) designates plants as noxious weeds to control, eradicate, and prevent the spread of these weeds. The USDA has designated several species as federally listed noxious weeds to be targeted for control or eradication (USDA 2010, 2012).

New Mexico’s Noxious Weed Management Act of 1998 directs the New Mexico Department of Agriculture (NMDA) to develop a noxious weed list and identify methods for control or eradication of these species. Under this act, noxious weeds are defined as “a plant species that is not indigenous to New Mexico and that has been targeted pursuant to the Noxious Weed Management Act for management or control because of its negative impact on the economy or the environment.” The NMDA has designated several species as state-listed noxious weeds to be targeted for control or eradication (NMDA 2009).

During field surveys, no USDA-listed or NMDA-listed Class A or B species were observed within or adjacent to the proposed project area. Five NMDA-listed Class C noxious weeds were identified within and adjacent to the proposed project area: cheatgrass, jointed goatgrass (*Aegilops cylindrica*), Russian olive (*Elaeagnus angustifolia*), Siberian elm (*Ulmus pumila*), and saltcedar (NMDA 2009). Class C weeds are those species which are widespread in the state. Management decisions for these species should be determined at the local level, based on feasibility of control and level of infestation.

In addition to the NMDA-listed noxious weeds, prickly Russian thistle (*Salsola tragus*) and spiny cocklebur (*Xanthium spinosum*) were observed in the proposed project area. These two plant species are not included on the USDA list or NMDA Class A, B, or C noxious weed lists; however, both species are considered invasive, non-native plant species. Spiny cocklebur is also considered a Watch List Species by the NMDA, which means that this plant has the potential to become problematic but more data are needed to determine if it should be included on a Class A, B, or C list (NMDA 2009).

3.5 Wildlife and Special Status Species

Biologists conducted a field survey of the proposed project area in May through October 2014 and August 2015. During the field surveys, biologists detected one amphibian species, 28 bird species, and 12 mammal species (Table 3.4).

Table 3.4. Wildlife Detected during 2014 and 2015 Field Surveys

Common Name	Scientific Name
Amphibians	
American bullfrog ¹	<i>Lithobates catesbeiana</i>

Common Name	Scientific Name
Birds	
American crow ¹	<i>Corvus brachyrhynchos</i>
Black-chinned hummingbird ¹	<i>Archilochus alexandri</i>
Canyon wren ¹	<i>Catherpes mexicanus</i>
Chipping sparrow ¹	<i>Spizella passerina</i>
Clark's nutcracker ¹	<i>Nucifraga columbiana</i>
Common raven ¹	<i>Corvus corax</i>
European starling ¹	<i>Sturnus vulgaris</i>
Golden eagle ¹	<i>Aquila chrysaetos</i>
Great-tailed grackle ¹	<i>Quiscalus mexicanus</i>
Horned lark ¹	<i>Eremophila alpestris</i>
House finch ¹	<i>Carpodacus mexicanus</i>
Lark sparrow ¹	<i>Chondestes grammacus</i>
Lesser goldfinch ¹	<i>Carduelis psaltria</i>
Mourning dove ¹	<i>Zenaida macroura</i>
Night hawk ¹	<i>Chordeilinae sp.</i>
Northern mockingbird ¹	<i>Mimus polyglottos</i>
Orange-crowned warbler ¹	<i>Vermivora celata</i>
Red-winged black bird ¹	<i>Agelaius phoeniceus</i>
Rock wren ¹	<i>Salpinctes obsoletus</i>
Say's pheobe ¹	<i>Sayornis saya</i>
Spotted towhee ¹	<i>Pipilo maculatus</i>
Tree swallow ¹	<i>Tachycineta bicolor</i>
Turkey vulture ¹	<i>Cathartes aura</i>
Western kingbird ¹	<i>Tyrannus verticalis</i>
Western scrub jay ¹	<i>Aphelocoma californica</i>
Wilson's warbler ¹	<i>Cardellina pusilla</i>
Yellow warbler ¹	<i>Setophaga petechia</i>
Yellow-breasted chat ¹	<i>Icteria virens</i>
Mammals	
Black-tailed jackrabbit ^{1,2}	<i>Lepus californicus</i>
Coyote ^{1,3}	<i>Canis latrans</i>
Desert cottontail ¹	<i>Sylvilagus audubonii</i>
Domestic cow ^{1,3}	<i>Bos taurus</i>
Domestic donkey ^{1,3}	<i>Equus asinus</i>
Domestic horse ^{1,3}	<i>Equus ferus caballus</i>
Domestic sheep ^{1,3}	<i>Ovis aries</i>
Gopher ²	<i>Geomys/Thomomys sp.</i>
Ground squirrel ²	<i>Spermophilus sp.</i>
Mule deer ³	<i>Odocoileus hemionus</i>
Pack rat ²	<i>Neotoma sp.</i>
Rocky mountain elk ³	<i>Cervus elaphus nelsoni</i>

Note: ¹ Direct observation; ² mounds and/or nests; ³ tracks and/or scats.

The BLM TFO wildlife management objective is to manage habitats on public land for the conservation and rehabilitation of fish, wildlife, and plant resources consistent with multiple use management principles (BLM 2012). However, the proposed project area is located within the Lower Gorge (Alternatives A and D) and Copper Hill (Alternative D) ACECs. The Lower Gorge ACEC was designated by the BLM to provide management for riparian vegetation, special status species, and wildlife habitat. The Copper Hill ACEC was designated by the BLM to protect riparian, fish, and wildlife habitat (BLM 2012). The ACECs are discussed further in Section 3.7 (Special Designations).

The proposed project area is also located within BLM-designated Big Game Winter Range (BLM 2012). During the 2014 and 2015 field surveys, biologists identified tracks and/or scat for two big game species: mule deer (*Odocoileus hemionus*) and Rocky Mountain elk (*Cervus elaphus nelsoni*).

The Rio Grande riparian area, which is within or in proximity to the proposed project area, represents a corridor that is necessary for wildlife species. In addition to the species listed in Table 3.4, an abundance of other animal species have the potential to occur within or in the vicinity of the proposed project area (Findley et al. 1975; Degenhardt et al. 1996; Frey 2004; Stebbins 2003; Cartron 2010); these animals are provided below, and a description of the wildlife species found within the BLM TFO planning area is provided in the RMP (BLM 2012).

- Mammals: badger (*Taxidea taxus*), long-tailed weasel (*Mustela frenata*), gray fox (*Urocyon cinereoargenteus*), red fox (*Vulpes vulpes*), ringtail (*Bassariscus astutus*), bobcat (*Lynx rufus*), striped skunk (*Mephitis mephitis*), big brown bat (*Eptesicus fuscus pallidus*), California myotis bat (*Myotis californicus*), western small-footed myotis bat (*M. ciliolabrum melanorhinus*), Mexican free-tailed bat (*Tadarida brasiliensis*), hoary bat (*Lasiurus cinereus*), pallid bat (*Antrozous pallidus*), and western pipistrelle bat (*Pipistrellus hesperus*)
- Amphibians and reptiles: Great Plains toad (*Anaxyrus cognatus*), Mexican spadefoot (*Spea multiplicata*), Couch's spadefoot (*Scaphiopus couchii*), eastern tiger salamander (*Ambystoma tigrinum*), Texas horned lizard (*Phrynosoma cornutum*), common side-blotched lizard (*Uta stansburiana*), common checkered whiptail (*Aspidoscelis tesselata*), eastern collared lizard (*Crotaphytus collaris*), coachwhip (*Coluber flagellum*), gophersnake (*Pituophis catenifer*), and western diamond-backed rattlesnake (*Crotalus atrox*)
- Raptors: ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo lagopus*), Harris's hawk (*Parabuteo unicinctus*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), prairie falcon (*F. mexicanus*), barn owl (*Tyto alba*), western burrowing owl (*Athene cunicularia hypugaea*), great horned owl (*Bubo virginianus*), and western screech owl (*Otus kennicotti*)

3.5.1 Migratory Bird Treaty Act

Most bird species are protected by the Migratory Bird Treaty Act (MBTA). Under the MBTA, unless permitted by regulations, it is unlawful to 1) pursue, hunt, take, capture, or kill; 2) attempt to take, capture or kill; and 3) possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. U.S. Fish and Wildlife Service (USFWS) regulations broadly define "take" under MBTA to mean "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." The MBTA provides no provisions for habitat protection or harassment for migratory birds as long as it does not result in "take" (16 U.S.C . 703).

EO 13186 directs departments and agencies to take certain actions to further implement the MBTA. Specifically, the EO directs federal agencies, whose direct activities will likely result in the "take" of migratory birds, to develop and implement a Memorandum of Understanding (MOU) with the USFWS that will promote the conservation of bird populations. In signing an MOU with the USFWS, the BLM has agreed to work with federal and non-federal partners to integrate migratory bird and habitat conservation into BLM planning efforts. Conservation programs and plans to integrate habitat conservation efforts include the USFWS Migratory Bird Program Strategic Plan, the North American Bird Conservation Initiative, the North American Landbird Conservation Plan, the North American Waterbird Conservation Plan, the North American

Waterfowl Management Plan, the United States Shorebird Conservation Plan, and conservation priorities identified by Partners in Flight and Avian Special Management Concern. Additional information about these programs and plans, including a USFWS list of birds of conservation concern for the proposed project area, can be found in the BA.

In June 2007, Hawks Aloft conducted point-count breeding surveys at two sites near the proposed project area: Agua Caliente and Orilla Verde. At these two sites the birds that were detected during the Hawks Aloft surveys consisted primarily of species associated with riparian areas during the breeding season (Hawks Aloft 2007). According to the eBird (2015) database, the Orilla Verde area harbors a number of wintering residents protected under the MBTA. A list of the bird species identified by Hawks Aloft and potential winter residents are provided in the BA.

A variety of raptor species (ferruginous hawk, Swainson's hawk, red-tailed hawk, rough-legged hawk, Harris's hawk, Cooper's hawk, northern harrier, American kestrel, prairie falcon, barn owl, western burrowing owl, great horned owl, and western screech owl) and a myriad of neotropical migrants have the potential to occur within or surrounding the proposed project area (Cartron 2010). Rio Embudo Birds (2014) submitted written comments during the public scoping period stating peregrine falcons are known to occur within the proposed project vicinity. In May and June 2014, peregrine falcon observations consisted of one recording in the proposed project area, two recordings immediately southwest of the proposed project area, and three recordings 0.5 to 1.7 miles west of where the Rio Grande crosses the county line for Taos County. During observations by local birders, it has been noted that peregrine falcon nesting in the proposed project vicinity begins in February, with pair-bonding taking place in January (Rio Embudo Birds 2014). In addition, during bird counts conducted by Rio Embudo Birds (2014), bald eagles were identified within and surrounding the proposed project area.

Southwestern willow flycatchers are also known to occur in the proposed project area (BLM 2012), and approximately 6.6 acres of southwestern willow flycatcher critical habitat has been mapped within Alternative A (USFWS 2015a). Peregrine falcons, bald eagles, and southwestern willow flycatchers are described further in the Special Status Species section below and in Section 4. The Rio Grande riparian area, which is within or in proximity to the proposed project area, represents a corridor that is necessary for migratory birds.

During the 2014 and 2015 field surveys, biologists identified 28 bird species (see Table 3.4). Two passerine nests were identified within and/or adjacent to the proposed project area during the field surveys; no raptor nests were identified during the field surveys. No suitable nesting burrows for burrowing owls were identified during the 2014 and 2015 field surveys of the proposed project.

3.5.2 Bald and Golden Eagle Protection Act

Bald eagles and golden eagles are protected under the Bald and Golden Eagle Protection Act and the MBTA. In New Mexico, bald eagles are typically found in association with water, with nest sites at a few undisclosed locations along lakes or streams in the northern and western portions of the state (Stahlecker and Walker 2010). Golden eagles nest at elevations ranging from 4,000 to 10,000 feet amsl, primarily on rock ledges or cliffs, and less often in large trees. Golden eagles are typically inhabit mountainous regions of open country, prairies, arctic and alpine tundra, open wooded areas, and barren areas. Both bald and golden eagles are carnivores. In New Mexico, bald eagles prey on fish but also on mammals, especially prairie dogs (*Cynomys* sp.). Golden eagles feed mainly on small mammals, as well as invertebrates, carrion, and other wildlife (Biota Information System of New Mexico [BISON-M] 2015).

As stated above, during Rio Embudo Birds' (2014) bird counts, bald eagles were identified within and surrounding the proposed project area. Suitable riparian habitat is present for bald eagles within and adjacent to the proposed project area. No bald eagles were identified during the 2014 and 2015 field surveys. Bald eagles are described further in the Special Status Species section below.

Golden eagles were observed during the 2014 and 2015 field surveys of the proposed project area. Suitable nesting, roosting, and foraging habitat is present within and/or adjacent to the proposed project area.

3.5.3 Special Status Species

The full list of special status species evaluated in this EA consist of 1) all federally protected (i.e., endangered and threatened) species; 2) additional species listed by the USFWS as candidate and proposed and species under review (USFWS 2015b); 3) BLM sensitive species, some of which are also listed as candidates or are under review by the USFWS and/or are state listed; and 4) state listed endangered and threatened species (BISON-M 2015; New Mexico Energy, Minerals and Natural Resources Department [EMNRD] 2006). The BLM manages certain sensitive species that are not federally listed as threatened or endangered in order to prevent or reduce the need for listing as threatened or endangered in the future. The authority for this policy and guidance is established by the Endangered Species Act of 1973 (ESA), as amended; Title II of the Sikes Act, as amended; FLPMA; and Department of the Interior Manual 235.1.1A.

Based on the 2014 and 2015 field surveys of the proposed project area and additional biological research, 15 special status species have the potential to occur in the proposed project area (Table 3.5). Detailed background information for these 15 species and the full species lists and descriptions for the other special status species that were evaluated are provided in the BA.

Table 3.5. Special Status Species with the Potential to Occur in the Proposed Project Area

Common Name (<i>Scientific Name</i>)	Status*	Range or Habitat Requirements	Potential for Occurrence in Proposed Project Area
Birds			
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	USFWS E State E	This species breeds and migrates through relatively dense riparian tree and shrub communities associated with rivers, swamps, wetlands, lakes, and reservoirs. Historically, the species nested in native vegetation, such as willows (<i>Salix</i> sp.), seepwillow (<i>Baccharis salicifolia</i>), boxelder (<i>Acer negundo</i>), buttonbush (<i>Cephalanthus occidentalis</i>), and cottonwood (<i>Populus</i> sp.). This species may also use thickets dominated by non-native saltcedar and Russian olive or mixed native and non-native stands of vegetation.	May occur along Alternative A. Critical habitat is mapped along Alternative A (USFWS 2015a), and nests are located 1.75 miles away from the survey area within Rio Grande Gorge Recreation Area at the Rio Bravo Campground. (BLM 2012). Critical habitat is not mapped along Alternative D (SWCA 2016).
Bald eagle (<i>Haliaeetus leucocephalus alascanus</i>)	BLM S State T	Occurs in New Mexico year-round. Breeding is restricted to a few areas mainly in the northern part of the state along or near lakes. In migration and during winter months the species is found chiefly along or near rivers and streams and in grasslands associated with large prairie dog colonies. This species typically perches in trees.	Known to occur in the proposed project area (Rio Embudo Birds 2014). The proposed alternatives cross suitable habitat.
Peregrine falcon (<i>Falco peregrinus</i>)	State T	Found in New Mexico year-round. All nests in New Mexico are found on cliffs. In migration and during winter months New Mexico's peregrine falcons are typically associated with water and large wetlands. Breeding populations are located in rugged, remote canyons of the Rio Grande.	According to Rio Embudo Birds (2014) and comments received during public scoping, this species is known to occur in the vicinity of the proposed alternatives. The proposed alternatives cross suitable habitat.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Potential for Occurrence in Proposed Project Area
Pinyon jay (<i>Gymnorhinus cyanocephalus</i>)	BLM S	Ponderosa pine (<i>Pinus ponderosa</i>) forests, piñon-juniper woodlands, and forests of mixed pine and oak. This species is a resident from central Oregon and Montana southward to central Arizona, New Mexico, and extreme northwestern Oklahoma.	May occur in the proposed project area. The proposed alternatives cross piñon-juniper woodlands.
Burrowing owl (<i>Athene cunicularia hypugaea</i>)	BLM S	Associated with prairie dog towns in dry, open, short-grass, treeless plains.	May occur along Alternative D. The proposed alternatives contain suitable habitat.
Fish			
Rio Grande cutthroat trout (<i>Oncorhynchus clarkii virginalis</i>)	USFWS C BLM S	This trout is a subspecies of cutthroat trout, endemic to the Rio Grande, Pecos, and possibly the Canadian River Basins in New Mexico and Colorado. Optimal cutthroat trout stream habitat is characterized by clear, cold water, a silt-free rocky substrate in riffle-run areas; cutthroat trout are stream spawners and require tributary streams with gravel substrate in riffle areas for reproduction to occur.	May occur along Alternative A. This species has been stocked by the NMDGF upstream of the proposed alternative area within the Wild Rivers Area of the Rio Grande Gorge since 2009 (personal communication, Ryan Besser, BLM, via telephone with Matt McMillan, SWCA, January 6, 2015).
Rio Grande chub (<i>Gila pandora</i>)	BLM S	Found in the Upper Rio Grande and Pecos River systems in Colorado and New Mexico. This species is found in pools of small to moderate streams near areas of current. It is found in association with undercut banks, overhanging bank vegetation, and aquatic plants.	May occur along Alternative A. Suitable pools near swift flowing water occur along the Rio Grande crossed by the proposed alternative.
Rio Grande sucker (<i>Catostomus plebius</i>)	BLM S	Found in the Upper Rio Grande drainage in southern Colorado and New Mexico. This species is found in areas near rapidly flowing water. Backwaters or banks adjacent to fast waters provide holding areas during the day. These suckers move to swifter water at night.	May occur along Alternative A. Suitable swift flowing water occurs along the Rio Grande crossed by the proposed alternative.
Mammals			
Spotted bat (<i>Euderma maculatum</i>)	BLM S State T	In New Mexico, this species is found in piñon-juniper woodlands, ponderosa pine, and mixed coniferous forest habitats. The species roosts in tree crevices and underneath bark. The spotted bat is usually captured around a water source, including desert pools or cattle tanks. It also may use rivers or desert washes as travel corridors.	May occur in the proposed project area. The proposed alternatives contain or are adjacent to suitable roosting and foraging habitat.

Common Name (<i>Scientific Name</i>)	Status*	Range or Habitat Requirements	Potential for Occurrence in Proposed Project Area
Pale Townsend's big-eared bat (<i>Plecotus townsendii pallescens</i>)	BLM S	Found in a variety of xeric to mesic habitats: scrub-grassland, desert scrub, semidesert shrublands, chaparral, saxicoline brush, tundra, open montane forests, spruce-fir, mixed hardwood-conifer, and oak woodlands and forests. This species is strongly correlated to the availability of caves or cave-like habitat, but it also uses abandoned buildings and rock crevices on cliffs.	May occur in the proposed project area. The proposed alternatives contain or are adjacent to suitable roosting and foraging habitat.
Gunnison's prairie dog (<i>Cynomys gunnisoni</i>)	BLM S	These populations inhabit montane shrublands and high mountain valleys and plateaus in the southern Rocky Mountains from 6,000–12,000 feet.	May occur along Alternative D. The proposed alternative contains suitable habitat.
Plants			
Lady tresses orchid (<i>Spiranthes magnicamporum</i>)	State E	A riparian/floodplain species, restricted to lowland riparian habitat in north-central New Mexico between 5,000 and 6,000 feet amsl.	May occur along Alternative A. The proposed alternative contains lowland riparian habitat.
Ripley's milkvetch (<i>Astragalus ripleyi</i>)	BLM S	In New Mexico, this species is found in piñon-juniper-oak communities and big sagebrush flats within Rio Arriba, and Taos Counties between 7,000–8,250 feet amsl.	May occur in the proposed project area. The proposed alternatives cross piñon-juniper and/or big sagebrush habitats.
Grama grass cactus (<i>Sclerocactus papyracanthus</i>)	BLM S	Grows in open flats in grasslands and piñon-juniper woodlands, associated with grama grass, where it is seldom seen because of its camouflage (its spines resemble dried blue grama leaves).	May occur in the proposed project area. The proposed alternatives cross open areas associated with piñon-juniper woodlands.

*Federal (USFWS) status definitions:

E = Endangered. Any species considered by the USFWS as being in danger of extinction throughout all or a significant portion of its range. The ESA specifically prohibits the take of a species listed as endangered. Take is defined by the ESA as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct.

C = Candidate. Any species (taxon) for which the USFWS has sufficient information to propose that it be added to the list of endangered and threatened species, but the listing action has been precluded by other, higher priority listing activities.

State status definitions:

E = Endangered. Any species that is considered by the State of New Mexico (NMDGF for wildlife and EMNRD for plants) as being in jeopardy of extinction or extirpation from the state.

T = Threatened. Any species that, in the view of the State of New Mexico, is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico.

Note: Except where otherwise noted, range or habitat requirements are taken from BISON-M (2015), USFWS (2015b), EMNRD (2006), Cartron (2010), and New Mexico Rare Plant Technical Council (1999).

3.6 Visual Resources

The BLM is responsible for managing public lands for multiple uses while ensuring that the scenic values of public lands are considered before authorizing actions on public lands. The BLM accomplishes this through the VRM system. The VRM system classifies land based on visual appeal, public concern for scenic quality, and visibility from travel routes or other key observation points (KOPs). The system is based on the premise that public lands have a variety of visual values, and these values mandate different levels of management. Visual values are identified through the visual resource inventory (VRI) process that consists of scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones (BLM 1986). Based on these three factors, BLM-administered lands are placed into one of four VRM classes. Management of the areas are then designated through the BLM's RMP process which considers the VRI

classes as well as other resource programs and uses. VRM Classes I and II are the most restrictive with regard to the allowable change to the visual landscape, and Classes III and IV are more lenient with regard to allowable modification.

The proposed project area is located within the Orilla Verde Recreation Area, the Lower Gorge ACEC, and the Copper Hill ACEC, all areas designated as VRM Class II. The objective of Class II is:

- To retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape (BLM 1986:6).

Visual resources include the natural and human modified landscape. The existing visual quality of the project area is influenced by the presence of the Rio Grande, the large cliffs and boulders of the canyon, the NM 68 corridor, and the villages of Pilar and Rinconada. The visual character of the landscape within and surrounding the project area is generally open with unencumbered views to surrounding lands. Within the canyon, these open views are typically of a shorter distance due to the meandering nature of the Rio Grande and the curve of the canyon walls.

Vegetation in the project area is characteristic of the Taos Plateau ecoregion (EPA Level IV). Larger woody species such as cottonwoods and piñon-juniper trees, as well as big sagebrush, are distributed across a relatively steep canyon landscape sprinkled with scattered boulders. The Rio Grande corridor creates a contrasting sinuous line on the land due to the presence of water, riparian areas, and sandy banks. See Figure 3.1 and Figure 3.2 for photographs showing typical vegetative cover.

Human elements on the landscape include scattered rural structures, evidence of the historic rail bed on the west side of the Rio Grande, occasional agricultural lands, the winding NM 68 roadway and associated rockslide protective fencing, the BLM Rio Grande Gorge Visitor Center located across NM 68 from Pilar, and an existing access road on the top of Taos Plateau where Alternative D would terminate. Predominant colors include tans and browns from the sandy soils and rock canyon walls and light to medium greens from the vegetation. Human elements are muted grays, whites, and browns, punctuated with occasional red and yellow signage.



Figure 3.1. Typical vegetation within the project area. Photo taken from the proposed ROW, facing northeast.



Figure 3.2. Typical vegetation within the project area. Photo taken from the proposed ROW, facing east.

For the purposes of evaluating visual impacts, the BLM identified KOPs that would represent the vantage points from where the proposed project would be seen by the largest numbers of sensitive viewers. The two KOPs and representative line of sight are presented in Figure 3.3. The first KOP (KOP 1) is located on the balcony of the BLM Rio Grande Gorge Visitor Center, on the south side of NM 68, looking across the river towards a segment of the Alternative A alignment as it crosses under the Rio Grande River and across an agricultural area. KOP 1 is also within view of Alternative D as the alignment passes the Rio Grande Gorge Visitor Center. The second KOP (KOP 2) is located on the shoulder of NM 68, looking across and up the hill at a segment of Alternative D (Figure 3.4). KOP 2 would not be within the viewshed of Alternative A. During the site visit, high-resolution photographs were taken and photo simulations were completed to represent the approximate view once the project is constructed and initial reclamation has occurred (see Section 4.4.2). In addition, visual contrast rating worksheets were completed to document the basic elements of form, line, color, texture, and scale found in the characteristic landscape (Appendix B). Photographic simulations from the KOPs are presented in Sections 4.1.8 (Alternative A/KOP 1) and 4.2.8 (Alternative D/KOP 2).

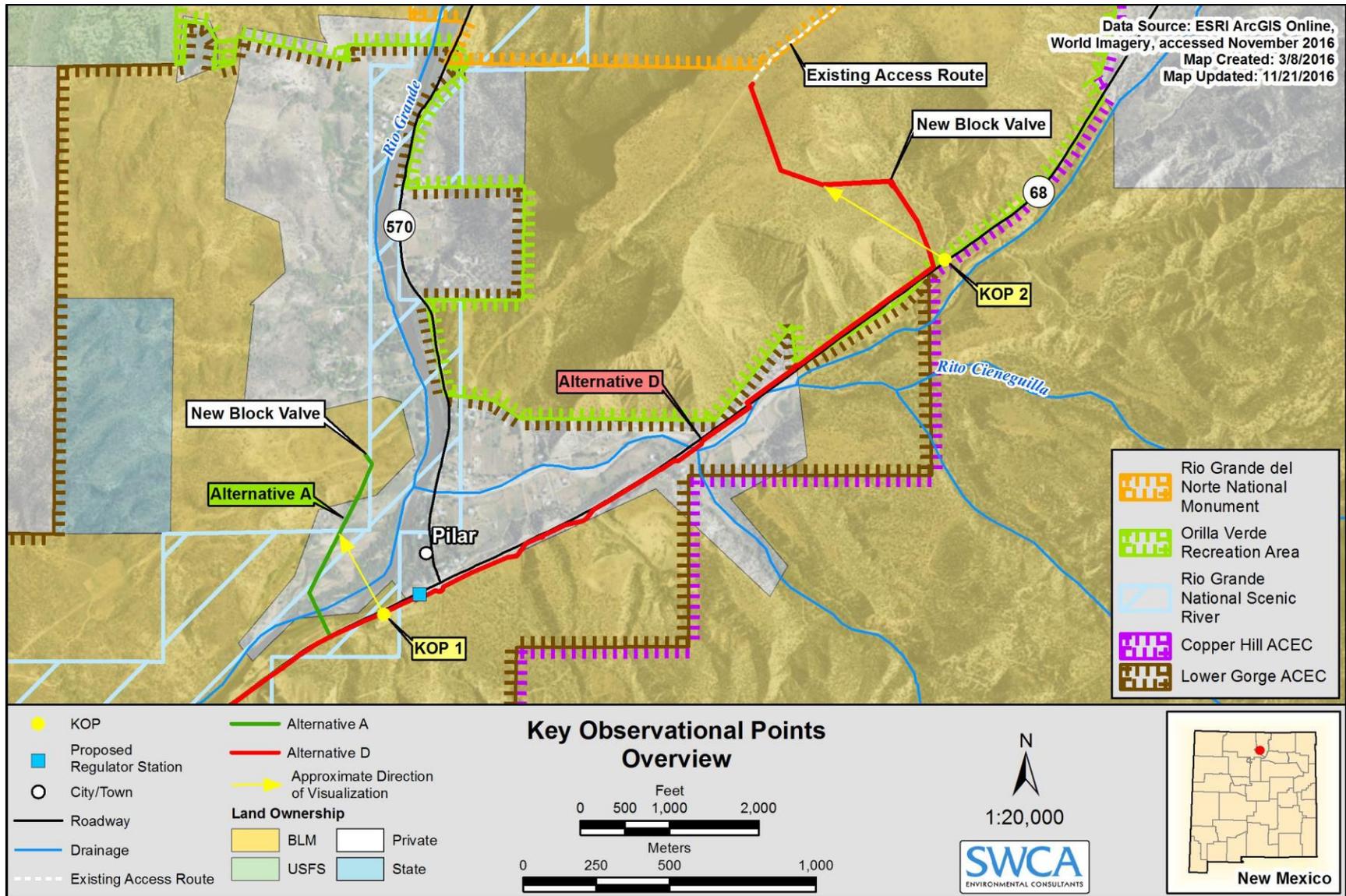


Figure 3.3. Overview of KOPs and line of sight to proposed alternative alignments.

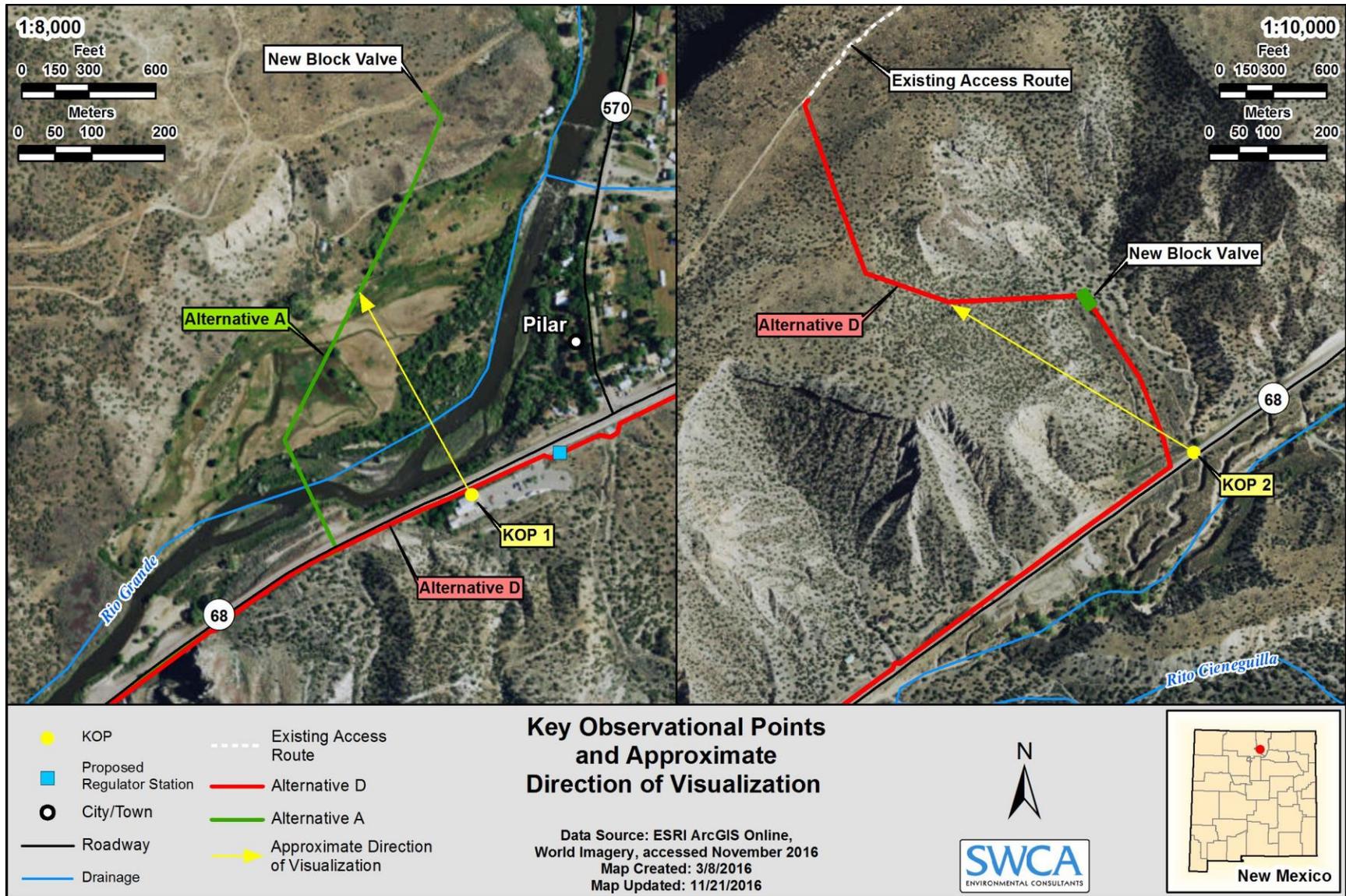


Figure 3.4. KOP 1 and 2 detail with aerial background.

3.7 Special Designations and Recreation

Three special designations occur within the proposed project area (Figure 3.5): the Lower Gorge ACEC, the Copper Hill ACEC, and the WSR segment of the Rio Grande. The Old Spanish National Historic Trail, a branch of the Camino Real National Historic Trail, is also located in the project vicinity.

The proposed project area is not located within an area that is managed for wilderness characteristics, designated as a wilderness study area, or is classified as wilderness.

3.7.1 Lower Gorge ACEC

Portions of both action alternatives are located within the Lower Gorge ACEC, which is 21,190 acres and extends from approximately the confluence of the Rio Grande and the Rio Pueblo de Taos (in the north) to approximately the Village of Velarde (in the south). The ACEC is managed per the prescriptions outlined in the BLM TFO RMP (BLM 2012) and the Rio Grande Corridor Final Plan (BLM 2000). As stated in the 2012 RMP, the Lower Gorge ACEC “is established to provide more direct management of relevant and important riparian vegetation, special status species and wildlife habitat, and cultural values. Management emphasis also includes recreation” (BLM 2012: 109). Land use authorization prescriptions for this area include excluding new ROWs, except for road improvements to improve safety or to provide access or utility service to non-federal land where no practicable alternative exists (BLM 2012:109) where utilities would be underground only and would be collocated with roads (BLM 2000:2-12). Visual resource prescriptions for the ACEC include working with ROW holders to improve the appearance of NM 68, NM 570, and the NMGC natural gas pipeline (BLM 2012:110).

3.7.2 Copper Hill ACEC

The northernmost staging area for both Alternatives A and D would overlap with the Copper Hill ACEC, specifically the Agua Caliente zone. The Copper Hill ACEC is 17,200 acres and contains relevant and important riparian, fish and wildlife habitat, scenic, cultural, and watershed resource values (BLM 2012:104). Similar to the Lower Gorge ACEC, the Copper Hill ACEC is also managed per the prescriptions outlined in the BLM TFO RMP (BLM 2012) and the Rio Grande Corridor Final Plan (BLM 2000). The Agua Caliente portion of the Copper Hill ACEC is designated as a ROW exclusion area (BLM 2012:104).

3.7.3 Wild and Scenic River Segment of the Rio Grande

In 1994, Congress amended the Wild and Scenic Rivers Act to include the 12-mile segment of the Rio Grande from the Taos Junction Bridge to the west section line of Section 15, Township 23 North, Range 10 East (just past the County Line Recreation Site) as a scenic segment. ORVs for the Rio Grande include scenery, recreation, geology, fish and wildlife, and cultural values (National Wild and Scenic Rivers System 2016). This WSR segment falls within the project area for both action alternatives. Land use authorization prescriptions associated with the WSR segment include allowing maintenance and improvements of existing ROWs that are consistent with the protection of the ORVs of the WSR segment and new ROW may also be considered for installation on existing structures, if such addition would not impact the designation’s ORVs (BLM 2012:120).

Due to the scenic nature of the Lower Rio Grande Gorge, recreation is an important resource use within and around the project area. Recreation opportunities in the immediate vicinity of the project area include boating, camping, fishing, picnicking, hiking, biking, rock climbing, and wildlife viewing. Both individual and commercial river rafters use the segment of the Rio Grande between Pilar and the County Line Recreation Site, known as the Racecourse. Boating activity is the heaviest from April through September. Recreation users access the Lower Rio Grande Gorge primarily via NM 68 (New Mexico River Outfitters Association 2014).

The BLM also operates the Rio Grande Gorge Visitor Center, located on the east side of NM 68, in the Village of Pilar. The visitor center provides information about the geological and natural history of the Rio Grande Gorge as well as recreation activities in the area. It is open daily from 8:30am to 4:30pm from

Memorial Day to Labor Day each year. After Labor Day, the visitor center is open Friday through Sunday, from 10:00am until 3:00pm.

3.7.4 Old Spanish National Historic Trail

The Old Spanish Trail was designated by Congress as part of the National Trails System (BLM 2012:114) and is a branch of the Camino Real National Historic Trail. The trail crosses approximately 33.5 miles of public land in the TFO planning area and consists of three routes with 10 segments. The route closest to the Proposed Action is the North Branch, which generally follows NM 68 from Española to Taos, and then northward to the Colorado-New Mexico state line. The trail segments are managed by the BLM according to the management prescriptions contained with the BLM TFO RMP (BLM 2012:114–115) and the National Park Service’s Trail Management Plan (National Park Service 2004). A 1-mile-wide corridor encompassing the trail routes and segments are to be used to define the area in which the prescriptions are to be implemented. Relevant to Alternatives A and D, the management prescription that applies to the pipeline re-route is listed under Visual Resources: all 21,280 acres of the trail corridor are to be managed as VRM Class II and the BLM is to “determine if any proposed project can be seen from the trail and propose suitable mitigation” (BLM 2012:115). It is possible that the proposed project could be visible from portions of the Old Spanish Trail, although no viewshed analysis was conducted for the proposed project.

Although the location of the Old Spanish Trail appears to be misplotted in the vicinity of Pilar, the official route appears to come within 1 mile of Alternatives A and D southeast of NM 68 in a constricted canyon approximately 4.6 miles southwest of the Rio Grande Gorge Visitor Center and southeast of the Alternative D pipeline route from NM 68 upslope to the unnamed mesa containing a portion of the Rio Grande del Norte National Monument (Trowbridge et al. 2016).

Additional information about the Old Spanish Trail as a cultural resource can be found in Section 3.3.

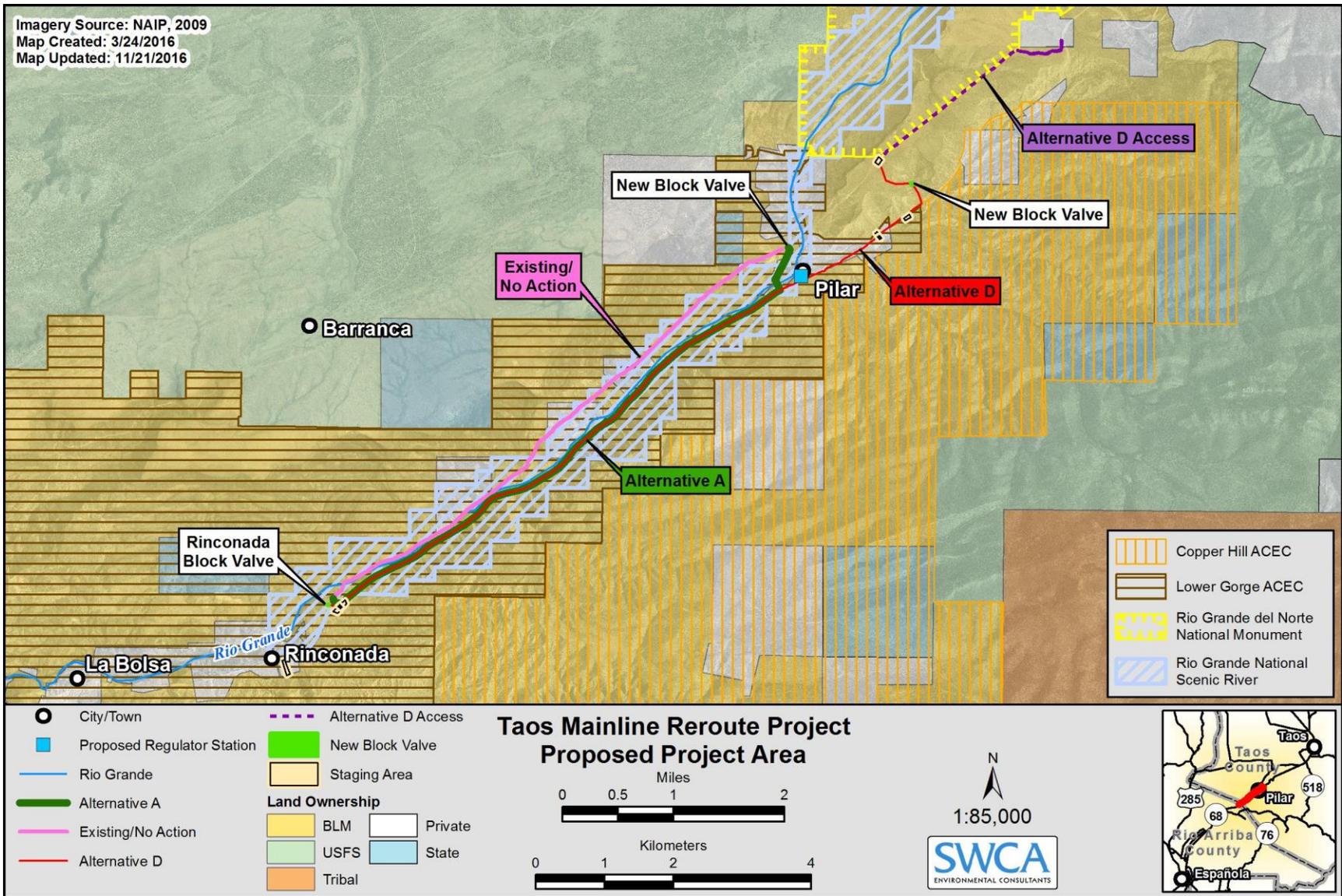


Figure 3.5. Special designations within the proposed project area.

3.8 Livestock Grazing

The BLM is responsible for managing livestock grazing on federal acres. Livestock grazing within the TFO planning area includes the grazing of domestic cattle, sheep, goats, and horses and allows for approximately 58,406 active animal unit months (AUMs) of livestock forage. However, in the last 10 years, the actual use of AUMs has ranged between 16,315 and 29,172 due to non-permitted/leased allotments, drought, rising operating cost, market conditions, and implementation of grazing practices to improve range conditions. The season of use for livestock grazing varies from year round to seasonal rotations. The most common livestock operations in the project area are cattle and calf operations (BLM 2012).

The proposed project crosses one grazing allotment managed by the BLM TFO. The Hondo Allotment, number 517, is 2,063 acres total, with 1,860 acres of BLM land and 203 acres of private land. The allotment is located at the top of Taos Plateau and is permitted for 64 AUMs. Permitted livestock numbers for the allotment are set at levels that provide for plant recovery to enhance rangeland health. In the past, the allotment was reseeded to help with forage production (personal communication, James Harmon, BLM Range Technician, BLM, via email with Coleman Burnett, SWCA, November 16, 2015). Cattle are the only permitted livestock, with 10 animals authorized to use the area between June 15 and December 1 annually. Range improvements within the allotment include one fence, named the Hondo Canyon Fence, which is crossed by the project (personal communication, James Harmon, BLM Range Technician, BLM, via email with Coleman Burnett, SWCA, November 16, 2015).

3.9 Travel and Access

A majority of the proposed pipeline re-route, under both Alternatives A and D, would fall within the NMDOT ROW for NM 68. NM 68 is a winding two-lane state highway that is the primary route for residents within the gorge to access the closest towns of Taos (to the north) and Española (to the south). NM 68 is classified by NMDOT as a Rural Minor Arterial route and is used by local and regional traffic to access attractions in Taos County and southern Colorado (NMDOT 2015). Annual average daily traffic is estimated at 5,015 vehicles per day between NM 75 (south of the project area) to Pilar and 4,698 vehicles per day north of Pilar. According to the NMDOT, August is the peak travel period along the highway segment (NMDOT 2015:11).

Between Rinconada and Pilar, the highway is located between the Rio Grande and the eastern gorge wall, which is the base of the Picuris Mountains (EA Engineering, Science, & Technology, Inc. 2014). In many locations along this segment of highway, there are minimal shoulders to accommodate disabled vehicles, as well as fencing and barricades that are placed on the gorge side of the highway to prevent rockfall from entering the highway.

Within the project area, NM 68 is used to access the Rio Grande Gorge Visitor Center, which is located near Pilar, across from the NM 68 and NM 570 intersection. In addition, NM 68 provides access to the County Line and Quartzite Recreation Sites, where drivers can access the Rio Grande for rafting, fishing, photography, or general viewing of the scenic vistas of the gorge.

During public scoping, some commenters expressed concern over the potential effects to public safety and transportation from the proposed re-route of the pipeline to the NM 68 ROW. The public comments reflected concerns about traffic delays during construction that could require portions of NM 68 to be reduced to one lane and possibly delay emergency response times to the community of Pilar. Ongoing meetings with NMDOT have also identified the need to avoid lane closures during winter months, when snow removal within the construction zone would be likely to occur. As a result of these discussions, the construction period would begin in August to ensure construction activities along the highway portion of the project area would be concluded by the end of November. These concerns are addressed below in Section 4.1.10 for Alternative A and Section 4.2.10 for Alternative D.

3.10 Public Health and Safety

3.10.1 Hazards Associated with Pipeline Location

The Department of Transportation Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety ensures safety in the design, construction, operation and maintenance, and spill response planning of natural gas and hazardous liquid transportation pipelines. Pipeline Safety Advisory Bulletin ADB-97-03 informs owners and operators of natural gas pipelines of possible hazards relating to soil subsidence on pipeline facilities and instructs the owners and operators to monitor the potential impact of flooding and soil subsidence on those facilities. Further, the advisory bulletin states, “damage to a pipeline may occur as a result of additional stresses imposed on piping by soil movement/subsidence. The impact of moving soil against buried pipeline may result in forces sufficient to cause a failure” (Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety 1997:2). The NMGC Taos Mainline falls within the purview of Pipeline Safety Advisory Bulletin ADB-97-03.

Landslides can be triggered by earthquakes, erosion along rivers, or heavy precipitation. Human activity, e.g., logging, construction on hillsides, can also trigger sliding (New Mexico Bureau of Mines and Mineral Resources [NMBM&MR] 1995). Similar to other states, the historic data documenting past landslide events in New Mexico is minimal. The lack of data has resulted in incomplete mapping of landslide susceptibility. Based on data available, the risk for landslide occurrence in Taos County has been rated as moderate and high, depending on the source (NMBM&MR 1992; New Mexico Department of Homeland Security and Emergency Management 2013).

The pipeline is located in proximity to the Embudo fault, which has a pivot point near Pilar where fault motions along the north flank of the Picuris Mountains have been documented (Haneberg et al. 1992). Debris slide cienegas occur along the Rio Grande, identified by Haneberg and colleagues as locations where “upward-directed seepage forces and extremely shallow water tables greatly increase the likelihood of liquefaction and/or landsliding during an earthquake” (Haneberg et al. 1992:9–10). These debris slide cienegas have evidence of active movement (i.e., persistent, localized zones of saturation, fresh cracks and scarps, and preponderance of vegetation). An abundance of large boulders suggests that rockfalls have been a common occurrence along the Rio Grande Gorge in Taos and Rio Arriba Counties (NMBM&MR 1995). Three relatively recent landslide events have been documented along the river and NM 68 between Rinconada and Embudo. The events occurred in 1977, 1991, and 1998 and resulted in loss of life, infrastructure repairs costing nearly half a million dollars, temporary damming of the river, and road closures and repairs (NMBM&MR 1992).

3.10.2 Hazards Associated with Proposed Action Construction Activities

A major priority in land management for the TFO is ensuring health and human safety on its public lands. The BLM’s goals are to effectively manage safety hazards and hazardous materials, protect the health and safety of public land uses, protect the natural and environmental resources, minimize future hazardous risks including costs and liabilities, and mitigate physical hazards in compliance with all applicable laws, regulations, and policies. The BLM follows its national, state, and local contingency plans as they apply to emergency responses. These plans are also consistent with federal and state laws and regulations.

The proposed project is located in a constrained area with several active uses and activities, including traffic along NM 68, recreation both on the Rio Grande and within the gorge, and resource issues, such as proximity to the perennial Rio Grande, species habitat, and cultural resources. During construction of the pipeline, physical hazards such as welding equipment, heavy machinery, and deep trenches would be present.

Vehicular traffic, boaters, hikers, bikers, and wildlife viewers would be in the vicinity of the project area at all times. These users are warned about possible hazardous conditions in the project area through posted signs and would have limited access to the project area during construction.

OSHA regulates worker safety under the Occupational Safety and Health Act of 1970. This act requires employers and operators to provide a safe and healthy workplace for employees, and the agency must track and monitor reportable incidents of accidents and injury.

OSHA requires all chemicals stored within the project area during construction, and operations must be handled according to label directions for each chemical. All chemicals present within the project area must also have a Material Safety Data Sheet (MSDS) located in a specified central location where it could be accessed during an emergency situation. These MSDSs must be kept up to date and any new chemical added to the project area must have an MSDS added to the existing catalog. All lists of hazardous substances that may be stored within the project area must be updated at a minimum of once per month or more frequently if chemicals are added more often.

The EPA also regulates public health and safety through its Risk Management Program. This program requires facilities using extremely hazardous substances in excess of specified threshold quantities to evaluate typical and worst-case scenarios and have emergency response procedures in place to protect the public and the environment.

NMGC is committed to operating its facilities in a safe and environmentally sound manner. To achieve this goal, the company has systems and procedures in place ranging from written operating procedures, required internal policies and standards, and compliance audits/inspections and accountability for correcting findings.

4 ENVIRONMENTAL CONSEQUENCES

This chapter address impacts to the resources and resource uses identified by the issues in Section 1.4. On the basis of Council on Environmental Quality guidance and BLM NEPA Handbook H-1790-1, the following discussion is limited to those resources that could be impacted to a degree that warrants detailed analysis (40 CFR 1502.15). This chapter is organized by alternative and for each resource analyzed, the impacts discussion identifies:

- Direct impacts – impacts that are caused by the action and occur at the same time and in the same general location as the action.
- Indirect impacts – impacts that occur at a different time or in a different location than the action to which the impacts are related.

Section 4.3 offers a separate discussion of cumulative impacts, by resource, following the direct and indirect impact analysis provided for each alternative. A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other action.

4.1 Alternative A: Pipeline Re-route along NM 68 Terminating near Pilar

This section includes a thorough analysis of impacts to resources and resource uses for Alternative A, which would relocate the segment of Taos Mainline within the NM 68 ROW between the Rinconada block valve and the village of Pilar. The existing 8-inch-diameter pipeline would be replaced with a 12-inch-diameter steel pipeline within the relocated pipeline segment.

4.1.1 Soils

Four soil types (Yarts, Tinaja, Orthents, and Chimayo) make up the majority (87%) of soils that would be affected by this option (see Table 3.1 in Section 3.1). These soil types are susceptible to erosion, as they typically occur on hilly to steep-sloped areas and are coarsely textured.

Alternative A would result in approximately 58 acres of direct soil surface disturbance associated with constructing the ROW and block valves, including staging areas and temporary workspace. However, approximately 45 acres, or 77%, of Alternative A parallels NM 68, thereby reducing new impacts to soil resources.

Direct impacts to soils include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and porosity. These impacts can lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion.

Indirect impacts to soil resources can include a change in soil productivity due to mixing of topsoil with subsoil during trenching and grading. This has the greatest chance of occurring on sensitive soils, which include soils that are easily eroded with shallow profiles, such as those found in the project area. Another indirect impact is the colonization of noxious weeds on disturbed soils. This can occur anywhere soil is disturbed. Weeds can outcompete native species due to their ability to thrive under conditions with low soil moisture content, poor nutrient availability, and coarse soil textures. The design features and other BMPs detailed in Section 2.4 would minimize the potential mixing of topsoil with subsoil and include measures for reducing the spread of noxious weeds and seeding to re-establish vegetation in disturbed areas. Additionally, the SWPPP and Reclamation Plan, developed as part of the final POD, would include measures to minimize impacts to soils.

Approximately 57 acres impacted would be collocated within the NM 68 ROW or short-term disturbance outside the NM 68 ROW. Temporary workspace and staging areas would be reclaimed immediately following construction. Re-establishment of vegetation in the area by faster growing plants is expected

within 2 years after construction, given sufficient rainfall and proper seeding techniques. The growth of mature native plant communities may require decades to become fully re-established.

Long-term, permanent impacts outside the NM 68 ROW (1.1 acre) would consist of compacted soil and barren surface associated with the new block valves (0.2 acre) and compacted soils resulting from accessing the 15-foot-wide corridor (0.9 acre) directly over the pipeline for routine inspection, maintenance, and repair. These impacts would begin at construction and continue through the operational life of the pipeline until it is abandoned, at which time these areas will be reclaimed.

4.1.2 Water Resources

Stormwater runoff of contaminants or sediment into nearby and downstream wetlands and/or waterways could occur during construction and immediately following construction (prior to site stabilization). By adhering to the construction methods and project design features listed below, runoff into nearby/downstream wetlands and waterways would be limited and water quality within and downstream of the proposed project area would not likely be directly or indirectly impacted by the implementation of Alternative A.

- NMGC would file a Notice of Intent with the EPA NPDES program and prepare a SWPPP prior to construction. The BMPs identified within the SWPPP would be installed prior to construction and would be inspected and repaired (if necessary) during construction to prevent stormwater runoff into nearby and downstream wetlands/waterways.
- Hydrostatic test wastewater would be discharged off-site in a manner that prevents erosion or entry into or near existing wetlands or waterways; otherwise, the water would be transported to injection wells approved by the NMOCD.
- Following construction, permanent erosion control measures would be installed and seeding would occur in accordance with BLM requirements.

The construction methods and project design features are described further in Sections 2.3 and 2.4.

4.1.3 Wetlands

Out of the four wetlands identified within the Alternative A survey area, three (WL-A-02, WL-A-03, and WL-A-04) would be located outside the proposed disturbance areas and one (WL-A-01) would be along the Rio Grande within the proposed Alternative A ROW. NMGC would avoid WL-A-01 with the use of HDD construction methods to bore beneath the wetland. As stated in Section 2.3, the HDD enclosures (pits) for boring would be built to contain the drilling fluid at the entry and exit points and would be monitored closely at all times. When near a wetland, silt fences or other appropriate barriers would be installed above the wetland. Prior to project implementation, NMGC would prepare a frac out plan for boring beneath WL-A-01.

None of the wetlands identified within the Alternative A survey area would be impacted by the proposed alternative (Table 4.1).

Table 4.1. Wetland Impacts within Alternative A

Wetland Unique Identification	Impacts (acres)
WL-A-01	0.00*
WL-A-02	0.00
WL-A-03	0.00
WL-A-04	0.00
Total Wetland Impacts	0.00

*WL-A-01 would be located within the temporary and permanent ROW for Alternative A; however, this wetland would be avoided with the use of HDD construction methods.

4.1.4 Waterways

Out of the 19 waterways identified within the Alternative A survey area, 14 would be temporarily impacted by proposed project construction activities. One of the waterways (WB-A-17) is the Rio Grande, which would be located within the proposed Alternative A ROW. NMGC would avoid impacts to the Rio Grande with the use of HDD construction methods to bore beneath the river. As stated in Section 2.3 and above, the HDD pits for boring would be built to contain the drilling fluid at the entry and exit points and would be monitored closely at all times. When near a waterway, silt fences or other appropriate barriers would be installed above the waterway. Prior to project implementation, NMGC would prepare a frac out plan for boring beneath the Rio Grande.

To minimize impacts to water resources, NMGC would bore beneath streams or place the proposed pipeline in existing fill material above culverts, where feasible. If trenching across any of the potentially jurisdictional waterways is necessary during construction, NMGC would obtain a permit from the USACE prior to construction activities occurring within the subject waterways. Nationwide Permit (NWP) 12 authorizes the construction of utility lines, such as a natural gas pipeline, and other activities in one single and complete project that does not result in the permanent loss of greater than 0.5 acre of waters of the U.S. The proposed project falls within the regulatory threshold of NWP 12, as it is estimated to temporarily disturb no more than 0.2 acre at the largest water body crossing (WB-A-14/WB-D-14), with no permanent discharge of fill material into waters of the U.S. (Table 4.2). All impacts listed in this table would be temporary, and the acreage impacts provided in this table represent the maximum expected impacts associated with Alternative A.

Table 4.2. Waterway Impacts within Alternative A

Waterway Unique Identification	Impacts (acres)
WB-A-01/WB-D-01	0.04
WB-A-02/WB-D-02	0.02
WB-A-03/WB-D-03	0.00
WB-A-04/WB-D-04	0.00
WB-A-05/WB-D-05	0.03
WB-A-06/WB-D-06	0.02
WB-A-07/WB-D-07	0.00
WB-A-08/WB-D-08	0.04
WB-A-09/WB-D-09	0.04
WB-A-10/WB-D-10	0.02
WB-A-11/WB-D-11	0.03
WB-A-12/WB-D-12	0.03
WB-A-13/WB-D-13	0.00
WB-A-14/WB-D-14	0.17
WB-A-15/WB-D-15	0.06
WB-A-16/WB-D-16	0.04
WB-A-17 (Rio Grande)	0.00*
WB-A-18	0.02
WB-S-01	0.04
Total	0.60

*WB-A-17 (Rio Grande) would be located within the temporary and permanent ROW for Alternative A; however, this waterway would be avoided with the use of HDD construction methods.

Following construction, waterways that would be impacted by Alternative A would be restored following BLM TFO stipulations, USACE CWA Section 404 NWP 12 (Utility Line Activities) requirements, and NMED CWA Section 401 Water Quality Certification requirements. By following the BLM TFO stipulations and NWP requirements, no permanent waterway impacts would result from the implementation of Alternative A.

4.1.5 Cultural Resources

Direct impacts to a cultural site, if disturbed by construction, would include alterations to the physical integrity of the site. The primary impact indicator for cultural resources is the number of NRHP-eligible cultural resources sites to be disturbed within the project area.

In total, three NRHP-eligible resources intersect the proposed project ROW under Alternative A (Table 4.3). LA 158065 and HCPI 36835 are located outside the proposed pipeline ROW and area of potential effect (APE) and would not be impacted by the proposed project. LA 180696 is located within the originally proposed staging area for Alternative A; however, NMGC has revised the staging area size to avoid LA 180696. The site and adequate buffer zone around the site would be fenced to ensure protection. As a result, there would be no impacts to any of the three recommended eligible cultural resource sites under Alternative A.

Table 4.3. NRHP-eligible Cultural Resources within Alternative A

LA/HCPI No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Impact
LA 158065	Abandoned historic acequia; Hispanic: unspecified historic (A.D. 1540–1980); Anglo/Euro-American: Statehood–WWII through modern (A.D. 1930–1990)	Criteria A and C	No impact – site outside APE for Alternative A
LA 180696	Rock art; unknown aboriginal; Hispanic: unspecified historic (A.D. 1539–1950)	Criteria A and D	No impact - Alternative A staging area has been revised to avoid the site
HCPI 36835	Abandoned historic wooden bridge; constructed ca. 1930	Criteria A and C	No impact – site is outside APE for Alternative A

If a cultural resource is significant for reasons other than its scientific information potential, indirect impacts may also include audible, atmospheric, or visual elements that are out of character for the cultural resource. These impacts include temporary, non-physical effects that would last the duration of construction, such as increased noise due to heavy equipment and an increase in construction-related traffic in the area. Long-term effects may include a permanent increase in human and vehicle activity due to the construction, operation, and maintenance of facilities built within the project area. An increase in human activity in the area, as an indirect impact, could potentially contribute to direct adverse effects such as unauthorized removal or other alterations to cultural resources in the vicinity.

Old Spanish National Historic Trail (also called the Apodaca Trail)

The official trail route for the Old Spanish National Historic Trail comes closest to the Alternative A route in two places: 0.66 mile southeast of NM 68 in a constricted canyon approximately 4.6 miles southwest of the Rio Grande Gorge Visitor Center. The official route of the Old Spanish National Historic Trail is clearly misplotted in the vicinity of Pilar, traversing extremely steep slopes. It is likely that the trail was on or closely parallels NM 68 or its vicinity; however, the official route is used when considering direct and indirect effects (personal communication, Merrill Dicks, BLM Archeologist, via email with Chris Carlson, SWCA, July 22, 2015). No evidence of the Old Spanish National Historic Trail was identified within the current project area; therefore, the trail was not recorded as a part of the cultural resource survey for the proposed project.

Because the official Old Spanish National Historic Trail is more than 0.5 mile away from the project area for Alternative A, this alternative would have no direct disturbance to the trail itself. The alternative would impact the trail in the form of viewshed changes. Since Alternative A would be within the already disturbed NM 68 ROW for most of the route, the portions of the proposed project that could be seen from the trail are the segment on the north end of the route, where it would cross the Rio Grande and be routed for approximately 0.4 mile across the irrigated pasture south of Pilar and the proposed block valve site (see Figure 1.1). Both of these new disturbances on the landscape would be visible from the official historic trail route. The cultural

resources report developed for this project concludes the proposed project would result in no adverse effects to the Old Spanish Trail (Trowbridge et al. 2016). The impacts to the viewshed of the trail would diminish over time as successful vegetation occurs. In addition, tree screens would be left near the proposed alignment crossing the pasture, which would mitigate the impacts from this portion of Alternative A (see Section 4.1.6).

4.1.6 *Vegetation and Invasive Non-native Species*

During the construction phase of Alternative A, 58 acres of vegetation within the proposed project disturbance areas would be cleared and directly impacted. Approximately 45 acres, or 77%, of Alternative A parallels NM 68, thereby reducing new impacts to vegetation. One vegetative community type identified within the Alternative A area (piñon-juniper woodland) would be impacted by the proposed alternative, although the majority of the Alternative A route is located within the already heavily disturbed NM 68 ROW. The second vegetative community type identified within the Alternative A area (riparian woodland) would be avoided by proposed construction activities due to NMGC using HDD construction methods to bore beneath the Rio Grande, which is where the riparian woodland vegetative community is located. As stated in Section 2.3.3, vegetation clearing impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Short-term impacts would occur during site preparation and would continue until revegetation of the proposed project area by faster-growing plants is achieved, which is estimated to be 2 years after construction. Approximately 12 acres of surface disturbance would occur outside the NM 68 ROW under Alternative A, resulting in short-term impacts to vegetation. Post-construction reclamation activities would take place within the short-term impact areas (i.e., areas not required for long-term operation of the proposed project).

Long-term, permanent impacts would consist of compacted, barren surface associated with the block valves (0.2 acre) and vegetation maintenance within a 15-foot-wide corridor that is not collocated within the NM 68 ROW (0.9 acre), directly over the pipeline and around facilities. Vegetation maintenance would be required to properly maintain and inspect the pipeline and associated facilities, and it would consist of mowing shrubs and other vegetation within the 15-foot-wide corridor area. Once the proposed project is no longer required, the buried pipeline would be plugged and left in place and the portions of the proposed project area that were not reclaimed during post-construction reclamation would be reclaimed following a BLM TFO–approved abandonment plan.

Although the riparian woodland vegetative community and any associated wetlands would be avoided during construction of Alternative A, vegetation maintenance could take place within the 15-foot-wide corridor area located directly over the pipeline to meet future maintenance and operation needs. Vegetation maintenance in riparian areas would be conducted by hand and would be conducted using pedestrian access rather than driving in the area, thereby minimizing impacts to riparian areas.

During reclamation, permanent erosion control measures would be installed and seeding would occur in accordance with BLM TFO requirements. Re-established vegetation would consist of native species included in the BLM TFO–prescribed seed mixture and native species that are not deliberately planted. There is also the potential for noxious weeds and invasive species to become established within the proposed project area, as described further below. Although the replanting of disturbed soils could successfully establish vegetation in the proposed project area (i.e., with a biomass and species richness similar to those of local native communities), the resulting plant community could be different from the native community in terms of species composition, abundance, distribution, and representation of particular vegetation types, such as woodlands. The community composition of replanted areas would likely be greatly influenced by the species that are initially seeded, and colonization by species from nearby native communities may be slow. The establishment of mature native plant communities may require decades, and some community types may never fully recover from disturbance. Successful re-establishment of some habitat types may be difficult and may require considerably greater periods of time. Restoration of plant communities in areas with arid climates would be especially difficult (Monsen et al. 2004).

Indirectly, the deposition of fugitive dust generated during vegetation-clearing and grading activities, during the use of the 15-foot-wide corridor, and during wind events could reduce photosynthesis and productivity of the surrounding vegetation (Thompson et al. 1984; Hirano et al. 1995). The deposition of fugitive dust could also increase water loss in plants near the proposed project area (Eveling and Bataille 1984). Plant community composition surrounding the proposed project area could subsequently be altered, resulting in habitat degradation. Localized impacts on plant populations and communities could occur if seed production in some plant species is reduced. BMPs to control fugitive dust are incorporated into the project design features found in Section 2.4.

Additional BMPs and project design features associated with vegetation clearing and reclamation are provided in Section 2.4.

4.1.6.1 Invasive Non-native Species

Invasive non-native species are generally tolerant of disturbed conditions. The disturbed soils within the proposed project area could provide an opportunity for the introduction and establishment of invasive non-native species. Seeds or other propagules of invasive non-native species could be transported to the proposed project site from infested areas by equipment used at the site. Invasive non-native species could also spread from established populations near the proposed project area and colonize soils disturbed by proposed project activities. The longer time periods required for the re-establishment of plant communities in arid regions could create an increased potential for the establishment and spread of invasive non-native species, which typically develop high population densities and tend to exclude native plant species, thereby reducing species diversity and potentially resulting in long-term effects. The establishment of invasive non-native species could reduce the success of native plant community restoration efforts in the proposed project area and create a source of future colonization and degradation of adjacent undisturbed areas.

The establishment of invasive non-native species, particularly annual grasses, such as cheatgrass, which produce large amounts of easily ignitable fuel over large contiguous areas, could alter fire regimes. This situation could result in an increase in the frequency and intensity of wildfires. In plant communities that are not adapted to frequent or intense fires, native species, particularly shrubs and trees, could be affected, and their populations could be greatly reduced, creating opportunities for greater increases in invasive non-native species populations (Brooks and Pyke 2001).

If required, noxious weed treatments for the NMDA Class C species (cheatgrass, jointed goatgrass, Russian olive, Siberian elm, and saltcedar) identified within the proposed project area would adhere to BLM TFO policies. In addition, a project-specific Reclamation Plan would be prepared for the proposed project. This plan would deal with occurrences of noxious weeds within the proposed project area, treatment of known noxious weed areas, and methods to minimize the spread and establishment of noxious weeds and non-native invasive species.

BMPs and project design features for preventing the spread of invasive non-native species are provided in Section 2.4.

4.1.7 Wildlife and Special Status Species

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity).

There is available, similar habitat in the region surrounding the proposed project area that wildlife could utilize. However, 58 acres of vegetation (habitat) would be cleared during the construction phases associated with the Alternative A. Approximately 45 acres, or 77%, of Alternative A parallels NM 68, thereby reducing new impacts to wildlife. One habitat type (piñon-juniper woodland) would be impacted by the proposed alternative. The second habitat type identified within the Alternative A area (riparian woodland) would be avoided by proposed construction activities due to NMGC using HDD construction methods to bore beneath the Rio Grande, which is where the riparian woodland is located. As stated in Section 2.3.3,

vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Of the 12 acres of vegetation removal proposed outside the NM 68 ROW, 11 acres would be transformed to reclaimed land during post-construction reclamation. Approximately 1 acre would consist of long-term disturbance, associated with the 15-foot-wide maintenance corridor and two new block valves outside the NM 68 ROW. If reclamation is successful, the native vegetation communities would become re-established within the proposed project area. However, the re-establishment of some habitat types may be difficult and may require considerably greater periods of time (Monsen et al. 2004). As a result, reclamation of the proposed project area could have a long-term impact to wildlife by modifying habitat within and adjacent to the proposed project area. The change in vegetative species composition could modify cover and foraging opportunities for wildlife. Additional short-term direct impacts to wildlife could be the risk of direct mortality of species during construction, disruption or displacement of species from birthing and foraging areas, changes in activity patterns due to construction, increased human activity, increased predation due to displacement from their habitat, and other human activities such as noise disturbance.

Additionally, although the riparian woodland vegetative community and any associated wetlands would be avoided during construction of Alternative A, vegetation maintenance would take place within the 15-foot-wide corridor area located directly over the pipeline. Vegetation maintenance within this area would be conducted on a 3- to 5-year cycle, by hand, and by pedestrian survey(s) rather than driving in the area.

Surface-disturbing activities could affect wildlife through decreasing available forage and habitat and causing habitat alteration and fragmentation. Utility line densities break the available habitat into smaller pieces, which could lead to displacement and physiological stress on wildlife. Fragmentation results in direct and indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise. Habitat fragmentation would result from construction within areas that are not adjacent to existing surface disturbance. There would be approximately 0.5 mile of new, short-term habitat fragmentation resulting from the proposed project. This fragmentation would exist until reclamation is deemed successful by the BLM. The majority of the proposed pipeline would parallel existing disturbance; therefore, the features that parallel existing disturbance would not contribute to new habitat fragmentation.

Using the explanation provided in the paragraph above, the proposed project would result in 0.5 mile of new, long-term habitat fragmentation. This long-term fragmentation would be associated with the proposed pipeline, as the proposed staging area would be reclaimed following construction of the proposed project.

Noise disturbance would also impact wildlife by interfering with animals' abilities to detect important sounds or by posing an artificial threat to animals (Clinton and Barber 2013). Construction equipment is expected to contribute the highest noise levels to the project vicinity for the estimated 120-day construction phase associated with the proposed project alternative. The noise profile of the surrounding area is also influenced by the nearby roads, which would not change as a result of the proposed alternative.

Additional BMPs and project design features associated with wildlife are provided in Section 2.4.

Migratory Bird Treaty Act

In addition to the direct, indirect, short-term, and long-term impacts described above, no major or long-term effects on migratory birds are anticipated from the implementation of the proposed alternative. Approximately 12 acres of suitable nesting habitat would be impacted by the proposed alternative.

Incidental mortality or displacement of migratory bird species is possible on a local scale due to construction disturbance. However, many birds in the local area would move into adjacent habitats in response to habitat loss. Due to the mobility of adult birds, it is unlikely that they would be directly harmed by the proposed project. Noise and visual disturbances associated with project construction could temporarily deter this species from utilizing the proposed project area and immediate adjacent lands.

As described in Section 2.4, any vegetation removal taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish avoidance buffers until the young have fledged. Pre-construction nesting surveys would also establish the occupancy status of potentially suitable burrows for burrowing owls. If any active burrowing owl burrows are identified, a 200-meter avoidance radius would be established around the active nest site. No eggs, nestlings, or active nests should be directly harmed by the proposed project between March and August. As part of pipeline maintenance within the riparian woodland vegetative community, the vegetation trimming maintenance activities would take place outside the migratory bird breeding season.

In addition to the pre-construction nesting surveys, to protect passerine bird species and raptor species that are not considered a special status species (discussed below) but are protected under the MBTA, NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP (BLM 2012) and BA. These restrictions could be adjusted or waived by the BLM Authorized Officer on a site-specific evaluation.

Additional BMPs and project design features associated with migratory birds are provided in Section 2.4.

Bald and Golden Eagle Protection Act

In addition to the direct, indirect, short-term, and long-term impacts described above, no major or long-term effects to bald or golden eagles are anticipated from the implementation of the proposed alternative.

Bald eagles are known to occur within and surrounding the proposed project area (Rio Embudo Birds 2014). During the 2014 and 2015 field surveys, no bald eagles or inactive/active nests or roost trees were identified within and surrounding the proposed project area; however, suitable riparian habitat is present for bald eagles. The riparian woodland vegetative community would be avoided during construction of Alternative A; however, vegetation maintenance would take place within the 15-foot-wide corridor area located directly over the pipeline. Vegetation maintenance within this area would be conducted on a 3- to 5-year cycle, by hand, and by pedestrian access rather than driving in the area, and would take place outside the migratory bird breeding season. If a bald eagle roost site is established in the riparian area prior to construction, the BLM recommends avoiding activities within 0.5 mile of the roost site from January 1 to August 31 (BLM 2012). Additionally, NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP for bald eagles if a nest is established prior to construction (BLM 2012), which would consist of a 0.5- to 1.0-mile buffer around an active nest between January 1 and August 31.

Golden eagles are known to occur within and surrounding the proposed project area. During the 2014 and 2015 field surveys, golden eagles were observed, but no active/inactive nest sites were identified within and surrounding the proposed project area. NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP for golden eagles if a nest is established prior to construction (BLM 2012), which would consist of a 0.5-mile buffer around an active nest between January 1 and August 31.

Adult eagles would not likely be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity. The proposed project is not anticipated to cause take of individual bald or golden eagles, their nests, or eggs.

Special Status Species

In addition to the direct, indirect, short-term, and long-term impacts described above, impacts specific to special status species are described below.

Special status species with the potential to occur in the project area (southwestern willow flycatcher, bald eagle, peregrine falcon, pinyon jay [*Gymnorhinus cyanocephalus*], Rio Grande cutthroat trout [*Oncorhynchus clarkii virginalis*], Rio Grande chub [*Gila pandora*], Rio Grande sucker [*Catostomus plebius*], spotted bat [*Euderma maculatum*], pale Townsend's big-eared bat [*Plecotus townsendii pallascens*], lady tresses orchid [*Spiranthes magnicamporum*], Ripley's milkvetch [*Astragalus ripleyi*], and grama grass cactus [*Sclerocactus papyracanthus*]) were evaluated for possible impacts from the proposed project alternative. However, effect determination categories are written differently based on the legal status of a species and the responsibilities of the agency tasked to manage or protect that species.

Impact determinations for federally protected (i.e., threatened or endangered) species were assigned to one of three categories of possible effect, following USFWS guidelines.

- *May affect, is likely to adversely affect*—the project would have an adverse effect on the species or its critical habitat. Any action that would result in “take” of an endangered or threatened species is considered an adverse effect. A combination of beneficial and adverse effects is still considered “likely to adversely affect,” even if the net effect is neutral or positive. Adverse effects are not considered discountable because they are expected to occur. In addition, the probability of occurrence must be extremely small to qualify as discountable effects. Likewise, an effect that can be detected in any way or that can be meaningfully articulated in a discussion of the results of the analysis is not insignificant; it is an adverse effect.
- *May affect, is not likely to adversely affect*—Under this effect determination, all effects to the species and its critical habitat are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without adverse effects to the species (for example, there cannot be “balancing,” so that the benefits of the action would outweigh the adverse effects). Insignificant effects relate to the size of the impact and should not reach the scale where take occurs. Discountable effects are considered extremely unlikely to occur. Based on best judgment, a person would not: 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur. Determinations of “not likely to adversely affect, due to beneficial, insignificant, or discountable effects” require written concurrence from the USFWS.
- *No effect*—a determination of no effect means there are absolutely no effects to the species and its critical habitat, either positive or negative. It does not include small effects or effects that are unlikely to occur.

Impact determinations for all other species (USFWS candidate, BLM sensitive, species under federal review, and state-listed species that are not federally threatened or endangered) were evaluated for possible impacts as follows.

- *Beneficial impact*—the project is likely to benefit the species, whether it is currently present or not, by creating or enhancing habitat elements known to be used by the species.
- *May impact individuals or habitat, but is not likely to result in a trend toward federal listing or loss of viability*—the project is not likely to adversely impact a species if 1) the species may occur but its presence has not been documented, and 2) project activities would not result in disturbance to areas or habitat elements known to be used by the species.
- *May impact individuals or habitat and is likely to result in a trend toward federal listing or loss of viability*—the project is likely to adversely impact a species if 1) the species is known to occur in the project area, and 2) project activities would disturb areas or habitat elements known to be used by the species or would directly affect an individual.

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a USFWS-listed endangered species and State of New Mexico endangered species. Southwestern willow flycatchers are also protected under the MBTA. Threats to this species consist of loss, alteration, and fragmentation of habitat (New Mexico Partners in Flight 2016).

Southwestern willow flycatchers are known to occur in the proposed project area (BLM 2012) and approximately 6.6 acres of southwestern willow flycatcher critical habitat has been mapped within Alternative A (USFWS 2015a). During the 2014 and 2015 field surveys, no southwestern willow flycatchers were identified within or adjacent to the proposed project area. The riparian woodland within the proposed alternative area is suitable for southwestern willow flycatchers; this area is not densely vegetated and is patchy and narrow. According to the BLM (2012), the critical habitat in the proposed alternative area is not typically dense enough for flycatchers. Additionally, the BLM TFO biologist has stated that although southwestern willow flycatchers may occur in the proposed alternative area, this species currently does not nest within the proposed alternative area (personal communication, Valerie Williams, BLM TFO biologist, via project kickoff meeting with Matt McMillan, SWCA, April 7, 2014). Flycatchers have been documented within 2 miles of the survey area in the Rio Grande Gorge Recreation Area.

The riparian woodland vegetative community would be avoided during construction of Alternative A; however, vegetation maintenance would take place within the 15-foot-wide corridor area located directly over the pipeline. Vegetation maintenance within this area would be conducted on a 3- to 5-year cycle, by hand, and by pedestrian access rather than driving in the area, and would take place outside the migratory bird breeding season.

If construction takes place within critical habitat during the migratory bird breeding season, BLM TFO RMP protocols for pre-construction presence/absence surveys would be conducted prior to construction activities taking place. If southwestern willow flycatchers are found nesting within the proposed alternative area, a 0.25-mile buffer would be established around the nest.

The proposed project is not anticipated to cause take of individual southwestern willow flycatchers, their nests, or eggs. The proposed project alternative *may affect, is not likely to adversely affect* the southwestern willow flycatcher or critical habitat.

Bald Eagle

The bald eagle is a State of New Mexico threatened species and a BLM sensitive species. Bald eagles are also protected under the Bald and Golden Eagle Protection Act and MBTA. Impacts to bald eagles posed by the proposed alternative are provided in the Bald and Golden Eagle Protection Act section above.

Peregrine Falcon

Peregrine falcons are State of New Mexico threatened species and are protected under the MBTA. Threats to these two falcon species consist of pesticide contamination, habitat loss/degradation, and human disturbances during nesting activities (New Mexico Partners in Flight 2016).

Peregrine falcons are known to occur in the proposed project vicinity (Rio Embudo Birds 2014). During the 2014 and 2015 field surveys (SWCA 2016), no peregrine falcons or inactive/active nests were identified within and surrounding the proposed project area. Local residents and birders provided comments during the public scoping period confirming the presence of peregrine falcons in May and June 2014, specifically, one recording in the proposed project area, two recordings immediately southwest of the proposed project area, and three recordings 0.5 mile to 1.7 miles west of where the Rio Grande crosses the county line for Taos County (Rio Embudo Birds 2014).

In addition to the direct and indirect impacts described for wildlife and migratory birds, suitable foraging habitat (i.e., riparian woodland and piñon-juniper woodland vegetative community types) is present within the proposed alternative area, and suitable nesting habitat (i.e., cliffs) is present in the proposed project vicinity. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

As described in Section 2.4 and for the MBTA section above, any construction taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish BLM-provided avoidance buffers until the young have fledged. For peregrine falcons, the BLM spatial and temporal restrictions for an active nest site is a 1.0-mile buffer between February 1 and August 31 (BLM 2012).

Due to the mobility of adult birds, it is unlikely that peregrine falcons would be directly harmed by the proposed alternative. Adult birds would likely move into adjacent habitats in response to the proposed project. If construction takes place during the breeding season, noise and visual disturbances associated with construction could temporarily deter these species from utilizing the proposed project area and immediate adjacent lands.

The proposed project is not anticipated to cause take of individual peregrine falcons, their nests, or eggs. The status of peregrine falcons is unlikely to be affected by the construction and maintenance of the

proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Pinyon Jay

The pinyon jay is a BLM sensitive species, and also protected under the MBTA. Threats to this species consist of loss/alteration of habitat (New Mexico Partners in Flight 2016).

In addition to the direct and indirect impacts described for wildlife and migratory birds, suitable nesting habitat for pinyon jays is present within the piñon-juniper woodland vegetative community type intersected by the proposed alternative. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

As described in Section 2.4 and for the MBTA section above, any vegetation removal taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish BLM-provided avoidance buffers until the young have fledged. If an active pinyon jay nest is identified, the BLM would provide the spatial and temporal restrictions.

Due to the mobility of adult birds, it is unlikely that pinyon jays would be directly harmed by the proposed alternative. Adult birds would likely move into adjacent habitats in response to the proposed project. If construction takes place during the breeding season, noise and visual disturbances associated with construction could temporarily deter these species from utilizing the proposed project area and immediate adjacent lands.

The proposed project is not anticipated to cause take of individual pinyon jays, their nests, or eggs. The status of pinyon jays is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Rio Grande Cutthroat Trout, Rio Grande Chub, and Rio Grande Sucker

The Rio Grande cutthroat trout is a USFWS candidate species. All three of these fish species are BLM sensitive species. Threats to these fish species consist of the presence of non-native fish species, anthropogenic and natural habitat disturbance (e.g., grazing, logging, mining, road construction, and water extraction), disease transmission, and population fragmentation.

Potentially suitable habitat is present within the Rio Grande. Impacts to the Rio Grande would be avoided by proposed construction activities due to NMGC using HDD construction methods to bore beneath the river. Therefore, the status of Rio Grande cutthroat trout, Rio Grande chub, and Rio Grande sucker is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Spotted Bat and Pale Townsend's Big-Eared Bat

The spotted bat is a State of New Mexico threatened species and BLM sensitive species, and the pale Townsend's big-eared bat is a BLM sensitive species. The main threats to these two special status bat species consist of habitat alteration, over collection, toxic chemicals, and roost loss/modification.

Potentially suitable foraging habitat is present within the proposed alternative area, and roosting habitat (i.e., rocky cliffs for spotted bats and caves, mine tunnels, and abandoned buildings for pale Townsend's big-eared bat) is present in the proposed project vicinity. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Temporary noise disturbances associated with construction activities could impact these two bat species. Construction equipment is expected to contribute to the noise levels for the estimated 120-day construction phase. The noise profile of the surrounding area is also influenced by the nearby roads, which would not change as a result of the proposed alternative. Noise associated with construction would also take place during daylight hours when these two bat species are less active.

Since no bats or bat signs were observed within the proposed project area during field surveys, the status of spotted bats and pale Townsend's big-eared bats is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Lady Tresses Orchid

Lady tresses orchid is a State of New Mexico endangered species. Threats to this species consist of habitat disturbances caused by human-related activities (e.g., construction and vehicles).

Potentially suitable habitat is present within the riparian woodland vegetative community along the Rio Grande. The riparian woodland vegetative community would be avoided during construction of Alternative A; however, vegetation maintenance would take place within the 15-foot-wide corridor area located directly over the pipeline. Vegetation maintenance within this area would be conducted on a 3- to 5-year cycle, by hand, and by pedestrian access rather than driving in the area.

During the field surveys, no lady tresses orchids were observed within the proposed project area. Since no individuals were identified within the proposed project area during the field surveys, and since the majority of the riparian woodland vegetative community type would be avoided by the project, the status of lady tresses orchid is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Ripley's Milkvetch and Grama Grass Cactus

These two plant species are BLM-listed special status species. Threats to Ripley's milkvetch consist of brush control projects and grazing by livestock and wildlife. Threats to grama grass cactus consist of habitat loss due to human-related activities, degradation of habitat due to overgrazing and trampling by livestock, off-road vehicle traffic, and urbanization.

Potentially suitable habitat is present within the piñon-juniper woodland vegetative community type intersected by the proposed alternative area. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

During the field surveys, no Ripley's milkvetch or grama grass cactus were observed within the proposed project area. Since no individuals were identified within the proposed project area during the field surveys, the status of Ripley's milkvetch and grama grass cactus is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

4.1.8 Visual Resources

Visual or scenic impacts are defined as the change in the appearance of the landscape as a result of development which can be positive (improvement) or negative (detraction) (IEA and the Landscape Institute 1995). Alternative A has been evaluated in terms of the anticipated changes in form, line, color, and texture of the visible landscape. A viewshed analysis was performed for the proposed project using ArcGIS to identify all areas that can be seen from the proposed alignment, based on a non-vegetated landscape. This analysis can be considered conservative, because existing vegetation would help minimize impacts to visual resources by screening views of the proposed project.

The most frequent viewers of the proposed disturbance would be tourists using NM 68 to reach recreation areas, river users, local residents of Pilar, Rinconada, and Taos, and visitors and staff at the BLM Rio Grande Gorge Visitor Center and the Rio Grande National Monument nearby. Alternative A would impact approximately 58 acres of vegetation, of which 45 acres or 77% of the project area would be located within the NM 68 ROW. Of the total disturbance, 47 acres are on BLM lands, all classified as VRM Class II, and the remaining acreage is on private lands.

Overall, the project would generate visual impacts primarily because of the removal of vegetation all along the proposed alignment resulting in direct short-term impacts through the added contrast in line (introduction of an additional linear feature), color (the disturbed areas appear lighter than the surrounding area), and texture (the disturbed areas appear smoother after reclamation). Over time, these impacts would lessen as revegetation success is achieved. In the long-term, the buried pipeline alignment would remain visible through alteration to vegetative composition and texture, with the effects gradually diminishing over time, as the soils revert to the natural color and vegetation continues to grow.

Long-term visual resource impacts from Alternative A would also occur at two proposed facility locations where permanent equipment would be installed. The first location is at the new Rinconada block valve, where new equipment would be installed within the existing ROW (0.1 acre). The second location is at the proposed 0.1-acre new block valve aboveground facility on top of the hill located west of Pilar. The aboveground facilities would include pipe vents approximately 8 feet tall (max) and a 15-foot pole/tower would be constructed for the SCADA antenna. The clearing of vegetation at the new aboveground facilities would create a new visual element in the surrounding landscape. The aboveground facilities would introduce vertical lines and forms at close distance creating a strong contrast with the existing horizontal to indistinct lines in the landscape. This disturbance would occur within the Lower Gorge ACEC, and river users and residents would be able to glimpse the proposed block valve location up on the mesa west of Pilar, for approximately 0.2 mile as they head south (southeast, downstream). These impacts would be long-term because the facilities would be in operation for the life of the pipeline.

Impacts from the portion of Alternative A that crosses beneath the Rio Grande and proceeds across the agricultural field, visible to viewers at the visitor's center, are the subject of the KOP 1 analysis and photographic simulation shown in Figure 4.1 and Figure 4.2. This simulation represents the visual projection at 5 years post-construction and assumes that revegetation is successful.

In the bottom photograph for KOP 1, the pipeline disturbance is faintly visible as a linear feature with lighter color than the surrounding landscape crossing through the field behind the trees. The simulation is designed to represent vegetative success approximately 5-years post-construction. The tree screen would be left in place and that masks much of Alternative A from the casual observer. The change to the landscape and contrast would be low.

In summary, Alternative A would not exceed management objectives for VRM Class II because:

- 1) the majority of the pipeline length would be installed within the existing NM 68 ROW, thereby collocating the linear feature within the confines of the existing road footprint. This collocating of a new linear element would mean that overall contrast would be low and would not attract the attention of the casual observer.
- 2) the simulation from KOP 1 demonstrates that the visibility of the project would fade over time, would be largely blocked from view because of existing tree screens, and no change would occur to the ridge facing KOP 1 because the portion of the pipeline climbing the ridge would be bored below the surface level.

Alternative A would have a greater impact to the viewshed of the river corridor than Alternative D, because the block valve for Alternative A would be more visible from the river than Alternative D.



Figure 4.1. Before photograph of KOP 1 depicting disturbance to the landscape.



Figure 4.2. After photograph of KOP 1 depicting disturbance to the landscape.

4.1.9 Special Designations and Recreation

Under Alternative A, surface disturbance would occur within the Lower Gorge ACEC and immediately adjacent to the WSR scenic segment of the Rio Grande. Construction of the proposed pipeline would remove approximately 58 acres of vegetation, which represents 0.3% of the Lower Gorge ACEC. The proposed pipeline ROW would be collocated along NM 68 for 5 of the 5.5 total miles of the re-routed pipeline, thereby minimizing impacts to the special designations. One staging area would be located in the Copper Hill ACEC, but no new surface disturbance would occur within the ACEC because the staging area would be located within a portion of the old quarry located on BLM lands approximately 0.5 mile north of the Rio Grande Gorge Visitor Center.

Approximately 17.2 acres of surface disturbance within the ACEC and adjacent to the WSR segment would be located outside the NM 68 ROW. The permanent surface disturbance includes a 0.2-acre aboveground facilities located near Rinconada and west of Pilar to house a new block valve, inline inspection facilities, and SCADA equipment. The maximum height of the equipment at the aboveground facilities would be a 15-foot-tall tower for the SCADA equipment. The addition of new infrastructure to the area would add a new, although incremental, visual element to the landscape, which would adversely impact the scenic values in the ACEC and WSR segment within proximity of the aboveground facilities. Refer to Section 4.1.8 for more information regarding visual resource impacts and compliance with VRM classes.

The collocation of the majority of the proposed project along the existing NM 68 ROW would minimize the level of intrusion on the natural landscape. Alternative A is not in conflict with management prescriptions for the ACEC because the RMP allows for new utility projects to be underground and collocated within existing ROWs and roads (BLM 2012:42). Alternative A would not compromise the ORVs identified for the entire designated scenic WSR segment of the Rio Grande; however, there would be localized impacts to a few of the ORVs in discrete locations. Table 4.4 summarizes the potential impacts to the ORVs associated with the WSR segment from Alternative A.

Table 4.4. Impact Summary for Rio Grande ORVs

ORV	Impact from Alternative A	Rationale for Impact Determination
Scenery	Localized, permanent adverse impact	Construction activities would result in a temporary impact to scenic views along the Rio Grande, between Pilar and where Alternative A would be bored under the Rio Grande. The 0.1-acre aboveground facility near Pilar would result in a permanent, adverse impact, because the 15-foot-tall SCADA tower would be visible from the river for a short distance.
Recreation	Localized, temporary impact	Construction activities would result in temporary impacts to recreation activities, such as rafting-related traffic, fishing, and photography, along the Rio Grande, between Pilar and where Alternative A would be bored under the Rio Grande.
Geology	No impact	Alternative A would not impact geological features in the Rio Grande Gorge.
Fish and wildlife	Localized, temporary impact	Construction activities would be conducted outside the migratory bird season. However, wildlife present in the area would be temporarily disturbed from the increased activity and noise along the Rio Grande, between Pilar and where Alternative A would be bored under the Rio Grande.
Cultural values	No impact	Alternative A would not impact cultural values associated with the Rio Grande WSR segment.

Temporary impacts to special designations and recreation from the proposed project include increased truck traffic during the construction phase of the project and potential conflicts among vehicle drivers accessing the Rio Grande Gorge Visitor Center, the Orilla Verde recreation area, and river access point located along NM 68. The temporary storage of water tanks in the Rio Grande Gorge Visitor Center parking lot would reduce parking availability for visitors for the duration of hydrostatic testing activities, which are estimated to last approximately 1 to 2 weeks during the month of November. This is not expected to be a major impact because less people frequent the visitor center in the late fall and winter, and the visitor center has reduced hours of operation during this time.

Construction would overlap with the last two months of the peak rafting season, which occurs from April through September. Commercial rafting businesses and individual recreationists are likely to experience traffic delays resulting from lane closures on NM 68. The lane closures would delay vehicles attempting to reach river access points along the roadway. It is estimated that traffic delays would range from 10 to 15 minutes, depending on the time of day and associated traffic volumes within the project area (personal communication, teleconference with NMGC staff: Chris Turnbow, Peter Ford, and Curtis Winner to Coleman Burnett, SWCA, on December 14, 2015). Construction within the NM 68 ROW is estimated to last for approximately 120 days (4 months) under Alternative A, resulting in adverse impacts to recreationists during this time. The proposed project is not expected to impact trail usage or rock climbing opportunities in the project vicinity.

Portions of the project area within the special designations and recreation area not required for long-term maintenance or access would be reclaimed with a BLM-approved seed mix at the end of the construction phase. This design feature would minimize impacts to the special designations by supporting regrowth of vegetation within the disturbed areas.

Old Spanish National Historic Trail

Please refer to Section 4.1.5, Cultural Resources, for a description of impacts to the Old Spanish Trail from Alternative A.

4.1.10 Travel and Access

Impacts to travel and access primarily would occur during construction of the 5-mile segment of Alternative A that is collocated within the NM 68 ROW. In order to safely place the re-routed pipeline within the highway ROW, traffic flow would need to be reduced to one travel lane to accommodate construction equipment, personnel, and the pipeline trench. Under Alternative A, the one-lane construction zone would include the County Line and Quartzite recreation access areas. Ingress and egress to the recreation areas would experience delays during construction, as described below.

Preliminary discussions between NMGC and the NMDOT indicate that no more than 1.5 miles of NM 68 can be reduced to one lane of traffic at any one time, which includes 1 mile of construction area plus an additional 0.25-mile safety zone on each end of the construction area. A pilot car, operating 24 hours per day, would be used to guide traffic through the one lane at a reduced speed, allowing traffic to flow in both directions in an alternating fashion. It is estimated that traffic delays would range from 10 to 15 minutes, depending on the time of day and associated traffic volumes within the project area (personal communication, teleconference with NMGC staff: Chris Turnbow, Peter Ford, and Curtis Winner to Coleman Burnett, SWCA, on December 14, 2015). Construction within the NM 68 ROW is estimated to last for approximately 120 days (4 months) under Alternative A, resulting in adverse impacts to traffic during this time.

Construction activities within the NM 68 ROW would be required to follow an NMDOT-approved traffic control plan. The traffic control plan would be developed and submitted to the NMDOT for review after the BLM decision on the selected alternative is approved. Coordination with emergency personnel providing services to the communities of Pilar and Rinconada would occur as part of the traffic control planning process. No interruptions to emergency services are expected to occur as a result of the proposed project.

4.1.11 Livestock Grazing

Under Alternative A, there would be no impacts to livestock grazing because there are no grazing allotments or private grazing activity within the project area.

4.1.12 Public Health and Safety

Numerous laws and safeguards are detailed in Section 2.4 design features to protect both workers and the public (see Section 2.3.3). Some potential risk is inherent in any construction project and this could include the potential risk of contamination to soil through improper disposal of waste, leaks from equipment, or accidental releases. There is also potential for releases of hazardous materials from the pipeline during operation.

When significant amounts of chemicals are stored on-site, governmental agencies would be notified as required under the Emergency Planning and Community Right-to-Know Act. The notification of hazardous substance releases outside the facility site is required under Comprehensive Environmental Response Compensation and Liability Act and New Mexico Administrative Code 19.15.29. All facilities must have informational signs, as directed under 43 CFR 3160. The design features in Section 2.4 detail the laws and regulations that would be followed to minimize impacts to public health and safety, as well as the incident response plans and procedures.

The potential for landslides is of particular concern to the project. Alternative A (as well as Alternative D) would include upgrading the existing pipeline in order to reduce public health and safety risks associated with pipeline failure and service interruption. These risks would be reduced by relocating the mainline out of the known landslide hazard area, which has caused service interruptions in the past, and by upgrading the Rinconada block valve to accommodate the inline inspection tool launcher and receiver to detect changes in pipeline pressure, which could indicate a leak, spill, or other potential public hazard.

During public scoping for the project, some commenters expressed concern that the vibrations from construction could cause rock slides, which is a type of landslide hazard. There is evidence of human activity, including seismic shaking or vibration-causing activities, triggering landslides (NMBM&MR 1995). However, as mentioned in Section 3.10.1, it is difficult to assess where landslides may occur because very little data exist to identify past slide events, and because there are various natural process and geologic conditions that could trigger a landslide, as well as human activities. In many cases, landslides are simply part of the cycle of geologic uplift and erosion. The alignment of Alternative A (as well as Alternative D) have been delineated to avoid landslide prone areas, using the best available information for identifying slope instability and landslide prone hazard areas. Due to the geologic activity in the gorge, there would still be some risk of pipeline rupture under Alternative A; however, the risk would be lower than when compared to the No Action Alternative.

4.2 Alternative D: Proposed Pipeline Re-route along NM 68 Terminating on Taos Plateau (Preferred Alternative)

This section includes a thorough analysis of impacts to resources and resource uses for Alternative D, the BLM's Preferred Alternative, which would relocate the segment of Taos Mainline between the Rinconada block valve and the tie-in location on the top of Taos Plateau. The pipeline would follow NM 68 north of Pilar and travel cross-county to connect to the existing pipeline at the top of Taos Plateau. The existing 8-inch-diameter pipeline would be replaced with a 12-inch-diameter steel pipeline within the relocated pipeline segment up to the point of the new northern block valve to be located at the base of Taos Plateau. A new 8-inch-diameter pipeline would be constructed from the new northern block valve to the tie-in location with the existing pipeline at the top of Taos Plateau.

4.2.1 Soils

Two soil types (Petaca-Prieta and Orthents-Badlands) make up the majority (74%) of soils that would be affected by this option (see Table 3.1 in Section 3.1). These soil types are susceptible to erosion, as they typically occur on hilly to steep-sloped areas and are coarsely textured.

Alternative D would result in approximately 77 acres of direct soil surface disturbance associated with constructing the ROW and aboveground facilities, including staging areas and temporary workspace, and from improving the existing access road. Approximately 59 acres, or 77% of the proposed project area, of the Alternative D alignment would be collocated within the NM 68 ROW, thereby reducing impacts to soil resources because these construction impacts would occur in previously and/or currently disturbed areas.

Direct impacts to soils include increased erosion from the removal of vegetative cover, contamination from accidental spills or leaks, and soil compaction from heavy equipment resulting in the loss of soil structure and porosity. These impacts can lead to increased rainfall runoff and susceptibility to high wind events and consequently increased erosion.

Indirect impacts to soil resources can include a change in soil productivity due to mixing of topsoil with subsoil during trenching and grading. This has the greatest chance of occurring on sensitive soils, which include soils that are easily eroded with shallow profiles, such as those found in the project area. Another indirect impact is the colonization of noxious weeds on disturbed soils. This can occur anywhere soil is disturbed. Weeds can outcompete native species due to their ability to thrive under conditions with low soil moisture content, poor nutrient availability, and coarse soil textures. The design features and other BMPs detailed in Section 2.4 would minimize the potential mixing of topsoil with subsoil and include measures for reducing the spread of noxious weeds and seeding to re-establish vegetation in disturbed areas. Additionally, the direction detailed in the SWPPP and Reclamation Plan for the project would be implemented and minimize soil impacts.

Approximately 13 acres of the surface disturbance occurring outside the NM 68 ROW would be short term, as ground disturbance associated with the ROW, temporary workspace, and staging areas would be reclaimed immediately following construction. Re-establishment of vegetation in the area by faster growing plants is expected within 2 years after construction, given sufficient rainfall and proper seeding techniques. The growth of mature native plant communities may require decades to become fully re-established.

Long-term, permanent impacts would consist of compacted soil and barren surface associated with the block valve aboveground facilities (0.2 acre), upgrading approximately 2,720 feet of existing two-track road on Taos Plateau (approximately 3.1 acres) to connect to the permanent service road used throughout the operational life of the pipeline, and compacted soils resulting from accessing the 15-foot-wide corridor (1.3 acres) directly over the pipeline for routine inspection, maintenance, and repair. These impacts would begin at construction and continue through the operational life of the pipeline until it is abandoned, at which time these area will be reclaimed.

4.2.2 Water Resources

General impacts to water resources would be the same as described under Alternative A in Section 4.1.2.

4.2.3 Wetlands

Impacts to wetlands under Alternative D would be less when compared to Alternative A. The one wetland (WL-D-01) identified within the Alternative D survey area would be located outside the proposed Alternative D disturbance areas. Therefore, no wetlands would be impacted by the proposed alternative.

4.2.4 Waterways

Out of the 36 waterways identified within the Alternative D survey area, 29 would be temporarily impacted by proposed project construction activities. To minimize impacts to water resources, NMGC would bore beneath streams or place the proposed pipeline in existing fill material above culverts, where feasible. If trenching across any of the potentially jurisdictional waterways is necessary during construction, NMGC would obtain a permit from the USACE prior to construction activities occurring within the subject waterways. NWP 12 authorizes the construction of utility lines, such as a natural gas pipeline, and other activities in one single and complete project that does not result in the permanent loss of greater than 0.5 acre of waters of the U.S. The proposed project falls within the regulatory threshold of NWP 12, as it is estimated to temporarily disturb no more than 0.3 acre at the largest water body crossing (WB-D-22), with no permanent discharge of fill material into waters of the U.S. (Table 4.5). All impacts listed in this table would be temporary, and the acreage impacts provided in this table represent the maximum expected impacts associated with Alternative D.

Table 4.5. Waterway Impacts within Alternative D

Waterway Unique Identification	Impacts (acres)
WB-A-01/WB-D-01	0.04
WB-A-02/WB-D-02	0.02
WB-A-03/WB-D-03	0.00
WB-A-04/WB-D-04	0.00
WB-A-05/WB-D-05	0.03
WB-A-06/WB-D-06	0.02
WB-A-07/WB-D-07	0.00
WB-A-08/WB-D-08	0.04
WB-A-09/WB-D-09	0.04
WB-A-10/WB-D-10	0.02
WB-A-11/WB-D-11	0.03
WB-A-12/WB-D-12	0.03
WB-A-13/WB-D-13	0.00
WB-A-14/WB-D-14	0.17
WB-A-15/WB-D-15	0.06
WB-A-16/WB-D-16	0.04
WB-D-17	0.11
WB-D-18	0.02
WB-D-19	0.01
WB-D-20	0.00
WB-D-21	0.00
WB-D-22	0.34
WB-D-23	0.04
WB-D-24	0.00
WB-D-25	0.05
WB-D-26	0.01

Waterway Unique Identification	Impacts (acres)
WB-D-27	0.04
WB-D-28	0.04
WB-D-29	0.01
WB-D-30	0.02
WB-D-31	0.01
WB-D-32	0.01
WB-D-33	0.02
WB-D-34	0.05
WB-D-35	0.01
WB-D-36	0.06
Total	1.39

Following construction, waterways that would be impacted by Alternative D would be restored following BLM TFO stipulations, USACE CWA Section 404 NWP 12 requirements, and NMED CWA Section 401 Water Quality Certification requirements. By following the BLM TFO stipulations and NWP requirements, no permanent waterway impacts would result from the implementation of Alternative D.

4.2.5 Cultural Resources

Direct impacts to a cultural site, if disturbed by construction, would include alterations to the physical integrity of the site. The primary impact indicator for cultural resources is the number of eligible cultural resources sites to be disturbed within the project area.

In total, four NRHP-eligible resources intersect the proposed project ROW under Alternative D (Table 4.6). LA 154897 was not relocated and is expected to occur outside the APE for Alternative D. HCPI 36835 is located outside the proposed pipeline ROW and would not be impacted by the proposed project. LA 13237 is located within the originally proposed pipeline route under Alternative D; however, NMGC has re-routed the pipeline to avoid LA 13237. As a result, there would be no impacts to any of the recommended eligible cultural resource sites under Alternative D. The portion of site LA 131445 that is within the APE for Alternative D has no elements that contribute to the resource's eligibility; therefore there would be no adverse effect to this site.

Table 4.6. NRHP-eligible Cultural Resources Located within the Proposed ROW for Alternative D

LA/HCPI No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Impact
LA 13237	Unspecified prehistoric (<A.D. 1550) and Hispanic unspecified historic (> A.D. 1550)	Criteria A and D	No impact – proposed pipeline has been re-routed to avoid site
LA 131445	Artifact scatter with features; unspecified prehistoric (A.D. 9500 B.C. –A.D. 1959), Hispanic (A.D. 1539–present), and Hispanic or Anglo (circa A.D. 1959)	Criterion D	No impact – portion of site inside the APE has no contributing eligible elements
LA 154897 (not relocated)	Unknown (no file on record with BLM TFO or ARMS) – probably poorly located	Unknown	Impact unknown – site was not relocated and expected to occur outside the APE for Alternative D
HCPI 36835	Abandoned historic wooden bridge; constructed ca. 1930	Criteria A and C	No impact – site is outside the APE for Alternative D

Beneficial impacts to cultural resources would occur under Alternative D as a result of the removal and reclamation of the Pilar regulator station and block valve that are both located near sensitive cultural resource sites on the slope of Taos Plateau, north of Pilar. Reclamation of the two aboveground facilities would help restore the setting that surrounds the cultural resources by removing modern, man-made intrusions that can be seen from the cultural sites.

Old Spanish National Historic Trail (also called the Apodaca Trail)

The official trail route for the Old Spanish National Historic Trail comes closest to the Alternative D route in two places: 0.66 mile southeast of NM 68 in a constricted canyon approximately 4.6 miles southwest of the Rio Grande Gorge Visitor Center and 0.75 mile southeast of the Alternative D pipeline route from NM 68 upslope to the unnamed mesa containing a portion of the Rio Grande del Norte National Monument. The official route of the Old Spanish National Historic Trail is clearly misplotted in the vicinity of Pilar, traversing extremely steep slopes. It is likely that the trail was on or closely parallels NM 68 or its vicinity; however, the official route is used when considering direct and indirect effects (personal communication, Merrill Dicks, BLM Archeologist, via email with Chris Carlson, SWCA, July 22, 2015). No evidence of the Old Spanish National Historic Trail was identified within the current project area; therefore, the trail was not recorded as a part of the cultural resource survey for the proposed project.

Because the official Old Spanish National Historic Trail is more than 0.5 mile away from the project area for Alternative D, similar to Alternative A, this alternative would have no direct disturbance to the trail itself, but would impact the trail in the form of permanent viewshed changes. Since Alternative D would be within the already disturbed NM 68 ROW for most of the route, the portions of Alternative D that could be seen from the trail are the segment between NM 68 upslope to the Taos Plateau (0.61 mile) and the proposed block valve site on top of Taos Plateau. Both of these elements would likely be visible from the official historic trail route. The cultural resources report developed for this project concludes the proposed project would result in no adverse effects to the Old Spanish Trail (Trowbridge et al. 2016). The impacts to the viewshed of the trail would diminish over time as successful vegetation occurs and spreads over the ROW.

4.2.6 Vegetation and Invasive Non-native Species

Impacts to vegetation under Alternative D would be very similar to the impacts described under Alternative A (see Section 4.1.6). During the construction phase of Alternative D, 77 acres of vegetation within the proposed project disturbance areas would be cleared and directly impacted. One vegetative community type (piñon-juniper woodland) would be impacted by the proposed alternative. Vegetation clearing impacts would be reduced within the portions of the proposed project that parallel NM 68 (59 acres). Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Short-term impacts outside of the NM 68 ROW (13 acres) would occur during site preparation and would continue until revegetation of the proposed project area by faster-growing plants is achieved, which is estimated to be 2 years after construction. Post-construction reclamation activities would take place within the short-term impact areas (i.e., area not required for long-term operation of the proposed project).

Long-term, permanent impacts would consist of compacted, barren surface associated with the new block valves (0.2 acre), compacted, barren surface associated with the improvement of the two-track road used to connect to the existing pipeline access road (approximately 3.1 acres), and vegetation maintenance within a 15-foot-wide corridor (1.3 acres) directly over the pipeline and around facilities. Vegetation maintenance would be required to properly maintain and inspect the pipeline and associated facilities, and it would consist of mowing shrubs and other vegetation within the 15-foot-wide corridor area. Once the proposed project is no longer required, the buried pipeline would be plugged and left in place and the portions of the proposed project area that were not reclaimed during post-construction reclamation would be reclaimed following a BLM TFO-approved abandonment plan.

Additional long-term impacts to vegetation associated with reclamation of vegetative communities would be the same as described under Alternative A in Section 4.1.6.

4.2.6.1 Invasive Non-native Species

Impacts related to the potential spread of invasive non-native species would be the same as described for Alternative A in Section 4.1.6.1.

4.2.7 Wildlife and Special Status Species

Impacts to wildlife would result from actions that alter wildlife habitats, including changes to habitat and disturbance. Altering wildlife habitat in ways that would be considered adverse may occur directly (through habitat loss from surface disturbance) or indirectly (through the reduction in habitat quality caused by increased noise levels and increased human activity).

There is available, similar habitat in the region surrounding the proposed project area that wildlife could utilize. However, 18 acres of vegetation (habitat), outside the NM 68 ROW, would be cleared during the construction phases associated with the Alternative D. One habitat type (piñon-juniper woodland) would be impacted by the proposed alternative. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68 due to the increased disturbance and lack of habitat in the highway ROW. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Of the approximately 18 acres of vegetation removal outside the NM 68 ROW, 13 acres would be transformed to reclaimed land during post-construction reclamation and approximately 5 acres would consist of long-term disturbance. Reclamation design features are presented in Section 2.4. If reclamation is successful, the native vegetation communities would become re-established within the proposed project area. However, the re-establishment of some habitat types may be difficult and may require considerably greater periods of time (Monsen et al. 2004). As a result, reclamation of the proposed project area could have a long-term impact to wildlife by modifying habitat within and adjacent to the proposed project area. The change in vegetative species composition could modify cover and foraging opportunities for wildlife. Additional short-term direct impacts to wildlife could be the risk of direct mortality of species during construction, disruption or displacement of species from birthing and foraging areas, changes in activity patterns due to construction, increased human activity, increased predation due to displacement from their habitat, and other human activities such as noise disturbance.

Surface-disturbing activities could affect wildlife through decreasing available forage and habitat and causing habitat alteration and fragmentation. Utility line and access road densities break the available habitat into smaller pieces, which could lead to displacement and physiological stress on wildlife. Fragmentation results in indirect habitat loss and degradation. Wildlife species would have to expend an increased amount of energy to avoid disturbed areas or when experiencing alarm due to human presence, traffic, and associated noise. Habitat fragmentation would result from construction within areas that are not adjacent to existing surface disturbance. There would be approximately 1.2 miles of new short- and long-term habitat fragmentation resulting from the proposed project, which includes the segment of pipeline located outside of the NM 68 ROW and improvements the segment of access road on top of Taos Plateau. The majority of the proposed pipeline, upgraded access road, and proposed staging areas would parallel existing disturbance; therefore, the features that parallel existing disturbance would not contribute to new habitat fragmentation.

Noise disturbance would also impact wildlife by interfering with animals' abilities to detect important sounds or by posing an artificial threat to animals (Clinton and Barber 2013). Construction equipment is expected to contribute the highest noise levels to the project vicinity for the estimated 120-day construction phase associated with the proposed project alternative. The noise profile of the surrounding area is also influenced by the nearby roads, which would not change as a result of the proposed alternative.

Additional BMPs and project design features associated with wildlife and special status species are discussed below and provided in Section 2.4.

Migratory Bird Treaty Act

In addition to the direct, indirect, short-term, and long-term impacts described above, no major or long-term effects on migratory birds are anticipated from the implementation of the proposed alternative. Approximately 18 acres of suitable nesting habitat would be impacted by the proposed alternative.

Incidental mortality or displacement of migratory bird species is possible on a local scale due to construction disturbance. However, many birds in the local area would move into adjacent habitats in response to habitat loss. Due to the mobility of adult birds, it is unlikely that they would be directly harmed by the proposed project. Noise and visual disturbances associated with project construction could temporarily deter this species from utilizing the proposed project area and immediate adjacent lands.

As described in Section 2.4, any vegetation removal taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish avoidance buffers until the young have fledged. Pre-construction nesting surveys would also establish the occupancy status of potentially suitable burrows for burrowing owls. If any active burrowing owl burrows are identified, a 200-meter avoidance radius would be established around the active nest site. No eggs, nestlings, or active nests should be directly harmed by the proposed project between March and August.

In addition to the pre-construction nesting surveys, to protect passerine bird species and raptor species that are not considered a special status species (discussed below) but are protected under the MBTA, NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP (BLM 2012) and BA.

Additional BMPs and project design features associated with migratory birds are provided in Section 2.4.

Bald and Golden Eagle Protection Act

In addition to the direct, indirect, short-term, and long-term impacts described above, no major or long-term effects to bald or golden eagles are anticipated from the implementation of the proposed alternative.

Bald eagles are known to occur within and surrounding the proposed project area (Rio Embudo Birds 2014). During the 2014 and 2015 field surveys, no bald eagles or inactive/active nests or roost trees were identified within and surrounding the proposed project area. Suitable riparian habitat is present along the Rio Grande for bald eagles; however, this area would not be impacted by the proposed alternative. NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP for bald eagles if a nest is established prior to construction (BLM 2012), which would consist of a 0.5- to 1.0-mile buffer around an active nest between January 1 and August 31.

Golden eagles are known to occur within and surrounding the proposed project area. During the 2014 and 2015 field surveys, golden eagles were identified but no active/inactive nest sites were identified within and surrounding the proposed project area. NMGC would follow the spatial and temporal restrictions provided in the BLM TFO RMP for golden eagles if a nest is established prior to construction (BLM 2012), which would consist of a 0.5-mile buffer around an active nest between January 1 and August 31.

Adult eagles would not likely be directly harmed by the proposed project because of their mobility and ability to avoid areas of human activity. The proposed project is not anticipated to cause take of individual bald or golden eagles, their nests, or eggs.

Special Status Species

In addition to the direct, indirect, short-term, and long-term impacts described above, impacts specific to special status species are described below.

Special status species with the potential to occur in the project area (southwestern willow flycatcher, bald eagle, peregrine falcon, pinyon jay, burrowing owl, spotted bat, pale Townsend's big-eared bat, Gunnison's prairie dog, Ripley's milkvetch, and grama grass cactus) were evaluated for possible impacts from the proposed project alternative. However, effect determination categories are written differently based on the

legal status of a species and the responsibilities of the agency tasked to manage or protect that species. The effect determinations are defined in Section 4.1.7.

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a USFWS-listed endangered species and State of New Mexico endangered species. Southwestern willow flycatchers are also protected under the MBTA. Threats to this species consist of loss, alteration, and fragmentation of habitat (New Mexico Partners in Flight 2016).

Southwestern willow flycatchers are known to occur in the proposed project vicinity, within 2 miles of the survey area in the Rio Grande Gorge Recreation Area (BLM 2012); however Alternative D does not contain any suitable habitat for the species. During the 2014 and 2015 field surveys, no southwestern willow flycatchers were identified within or adjacent to the proposed project area. Adverse impacts to the flycatcher could occur during construction activities that occur during the migratory season (April 15 – August 15), likely in the form of noise disturbance. However; these impacts would be short term and primarily confined to areas not likely to be used for nesting by flycatchers. Maintenance activities on the pipeline may also result in the temporary avoidance of the action area by flycatchers during migration. Alternative D does not cross any riparian habitat, thus the proposed project *may affect, and is not likely to adversely affect* the southwestern willow flycatcher.

Alternative D does not contain USFWS-designated critical habitat for the southwestern willow flycatcher; thus the proposed project will have *no effect* on flycatcher critical habitat. Portions of the proposed route are adjacent to designated critical habitat; therefore slight adjustments in the pipeline ROW could intersect critical habitat. If construction takes place within critical habitat during the migratory bird breeding season, BLM TFO RMP protocols for pre-construction presence/absence surveys would be conducted prior to construction activities taking place. If southwestern willow flycatchers are found nesting within the proposed alternative area, a 0.25-mile buffer would be established around the nest.

Bald Eagle

The bald eagle is a State of New Mexico threatened species and a BLM sensitive species. Bald eagles are also protected under the Bald and Golden Eagle Protection Act and MBTA. Impacts to bald eagles posed by the proposed alternative are provided in the Bald and Golden Eagle Protection Act section above.

Peregrine Falcon

Peregrine falcons are State of New Mexico threatened species and are protected under the MBTA. Threats to these two falcon species are provided in Section 4.1.7.

Peregrine falcons are known to occur in the proposed project vicinity (Rio Embudo Birds 2014). During the 2014 and 2015 field surveys (SWCA 2016), no peregrine falcons or inactive/active nests were identified within and surrounding the proposed project area. Local birding groups identified peregrine falcons in May and June of 2014, specifically, one recording in the proposed project area, two recordings immediately southwest of the proposed project area, and three recordings 0.5 mile to 1.7 miles west of where the Rio Grande crosses the county line for Taos County (Rio Embudo Birds 2014).

In addition to the direct and indirect impacts described for wildlife and migratory birds, suitable foraging habitat is present within the proposed alternative area, and suitable nesting habitat (i.e., cliffs) is present in the proposed project vicinity. Vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

As described in Section 2.4 and for the MBTA section above, any construction taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish BLM-provided avoidance buffers until the young have fledged. For peregrine falcons, the BLM spatial and temporal restrictions for an active nest site is a 1.0-mile buffer between February 1 and August 31 (BLM 2012).

Due to the mobility of adult birds, it is unlikely that peregrine falcons would be directly harmed by the proposed alternative. Adult birds would likely move into adjacent habitats in response to the proposed project. If construction takes place during the breeding season, noise and visual disturbances associated with construction could temporarily deter these species from utilizing the proposed project area and immediate adjacent lands.

The proposed project is not anticipated to cause take of individual peregrine falcons, their nests, or eggs. The status of peregrine falcons is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Pinyon Jay

The pinyon jay is a BLM sensitive species, and also protected under the MBTA. Threats to this species are provided in Section 4.1.7.

In addition to the direct and indirect impacts described for wildlife and migratory birds, suitable nesting habitat for pinyon jays is present within the piñon-juniper woodland vegetative community type intersected by the proposed alternative. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

As described in Section 2.4 and for the MBTA section above, any vegetation removal taking place within the proposed project area during the breeding season would be preceded by pre-construction nesting surveys to identify any occupied nests and establish BLM-provided avoidance buffers until the young have fledged. If an active pinyon jay nest is identified, the BLM would provide the spatial and temporal restrictions.

Due to the mobility of adult birds, it is unlikely that pinyon jays would be directly harmed by the proposed alternative. Adult birds would likely move into adjacent habitats in response to the proposed project. If construction takes place during the breeding season, noise and visual disturbances associated with construction could temporarily deter these species from utilizing the proposed project area and immediate adjacent lands.

The proposed project is not anticipated to cause take of individual pinyon jays, their nests, or eggs. The status of pinyon jays is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Burrowing Owl

The burrowing owl is protected under the MBTA and it is a BLM sensitive species. The burrowing owl is known to occur within the survey area. No burrowing owls were observed during biological surveys. The proposed project may impact individual burrowing owls, but it is not likely to result in a trend toward federal listing or loss of viability.

Spotted Bat and Pale Townsend's Big-Eared Bat

The spotted bat is a State of New Mexico threatened species and BLM sensitive species, and the pale Townsend's big-eared bat is a BLM sensitive species. Threats to these species are provided in Section 4.1.7.

Potentially suitable foraging habitat is present within the proposed alternative area, and roosting habitat (i.e., rocky cliffs for spotted bats and caves, mine tunnels, and abandoned buildings for pale Townsend's big-eared bat) is present in the proposed project vicinity. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along

the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

Temporary noise disturbances associated with construction activities could impact these two bat species. Construction equipment is expected to contribute to the noise levels for the estimated 120-day construction phase. The noise profile of the surrounding area is also influenced by the nearby roads, which would not change as a result of the proposed alternative. Noise associated with construction would also take place during daylight hours when these two bat species are less active.

During the field surveys, no bats or bat signs were observed within the proposed project area. The status of spotted bats and pale Townsend's big-eared bats is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Gunnison's Prairie Dog

The Gunnison's prairie dog is a BLM sensitive species. The Gunnison's prairie dog is a keystone grassland species. Suitable habitat occurs in the Alternative D project area for the Gunnison's prairie dog. However, no prairie dogs were observed during the biological surveys. The proposed project may impact individual Gunnison's prairie dogs, but is not likely to result in a trend toward federal listing or loss of viability.

Ripley's Milkvetch and Grama Grass Cactus

These two plant species are BLM-listed special status species. Threats to these species are provided in Section 4.1.7.

Potentially suitable habitat is present within the piñon-juniper woodland vegetative community type intersected by the proposed alternative area. As stated in Section 2.3.3, vegetation clearing (habitat) impacts would be reduced within the portions of the proposed project that parallel NM 68. Along the portions of the project paralleling NM 68, work would mostly be staged from the highway pavement and construction would take place within the previously disturbed road ROW.

During the field surveys, no Ripley's milkvetch or grama grass cactus were observed within the proposed project area. Since no individuals were identified within the proposed project area during the field surveys, the status of Ripley's milkvetch and grama grass cactus is unlikely to be affected by the construction and maintenance of the proposed project and would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

4.2.8 Visual Resources

The impacts to visual resources from Alternative D are the same as for Alternative A, up to the point where the alignments diverge, shortly before and to the southwest of the BLM Rio Grande Gorge Visitor Center. Alternative D continues northeast along NM 68, before crossing the highway and traveling up the slope, where the proposed pipeline would be constructed in the unnamed ephemeral drainage between the NM 68 highway and the Taos Plateau. Under Alternative D, the block valve aboveground facility would be constructed on the path of the re-routed pipeline, before it heads up the slope to the mesa. This block valve would not be visible to viewers in the Rio Grande Gorge but would be visible from passing motorists on NM 68 (see Figure 3.3). The existing access road on top of Taos Plateau would not contribute new visual elements to the viewshed.

Alternative D would impact 77 acres of vegetation in total, although 59 acres, or 77% of the project area, would be located within the NM 68 ROW. Of the total disturbance, approximately 66 acres are on BLM lands, all classified as VRM Class II, and the remaining acreage is on private lands. Alternative D would impact approximately 19 more total acres than Alternative A because of its increased length, and 19 more acres within VRM Class II areas.

KOP 1 is located on the deck of the Rio Grande Gorge Visitor's Center along NM highway 68. KOP 1 was chosen specifically to analyze the impacts of Alternative A passing through the surface area on the opposite side of the Rio Grande river, however, it would also be a vantage point to view a portion of Alternative D. In this area, Alternative D would be located in the shoulder of the existing NM Highway 68. It would pass very near the Visitor's Center. In the short-term, during construction of that particular segment, viewers at KOP 1 would see construction vehicles, equipment and workers, as well as safety flagging, traffic control drums, and fencing, while the pipeline is installed in the trench adjacent to the road. These impacts would last approximately 30 days total. The shoulder of the road would then be recontoured and surfaced to pre-construction conditions following construction. The proposed regulator station would not be visible from KOP 1, as topography would obstruct the view, if standing at KOP 1 and looking to the northeast.

KOP 2 is located on the shoulder of NM Highway 68 and represents the view of drivers on the highway as they pass the proposed route, permanent access route and proposed block valve, and up to the ridge where the project would crest the hill and no longer be visible from KOP 2. Photographic simulations are provided below (Figure 4.3 and Figure 4.4). In summary, Alternative D would have less impact to visual resources as viewed from the river corridor, than Alternative A, and impacts from KOP 1 would be temporary for Alternative D. However, Alternative D results in more overall disturbance to soils and vegetation than Alternative A as it is a longer alignment. Long-term impacts from Alternative D would continue to lessen over time as revegetation becomes successful.



Figure 4.3. Before photograph of KOP 2 depicting disturbance to the landscape.



Figure 4.4. After photograph of KOP 2 depicting disturbance to the landscape.

In the photographic simulation for KOP 2, the pipeline disturbance is mostly visible as a linear feature with lighter color, and smoother texture, than the surrounding landscape. In addition, a small notch is created at the top of the ridgeline due to removal of vegetation, creating a contrast to form. Because of the steep topography in the subject area, the surface disturbance within the pipeline ROW on the slope depicted in the KOP2 photograph would likely take more than 3 years to become revegetated. The proposed block valve would be a new permanent fixture to the landscape as viewed from KOP 2. NMGC has integrated project design features into the proposed project to encourage and support native regrowth of vegetation within the project area, and would paint the aboveground block valve and fencing according to BLM's preferences on a color to blend with the landscape (analysis assumes dark grey). This segment of Alternative D would be visible for approximately 0.1 mile of NM 68, primarily to southbound occupants of vehicles. The posted speed limit of the highway is 55 miles per hour. Given the orientation of the proposed pipeline and the speed of highway drivers, it is estimated that the pipeline ROW, proposed road and block valve would be visible for no more than 6 seconds to southbound vehicles.

Alternative D would not exceed management objectives for VRM Class II because: 1) potential sensitive viewers would only glimpse the visual contrasts from the proposed route, road, and block valve for a short time while traveling along the road; and 2) the proposed block valves sits 1,000 feet from NM Highway 68; and 3) implementation of proposed project design features would minimize those contrasts and visibility of the project in the long-term and over time would not attract the attention of the viewers traveling on the highway.

Additional beneficial impacts to visual resources would occur under Alternative D as a result of the removal and reclamation of the Pilar regulator station and block valve that are both located adjacent to the community of Pilar. Reclamation of the two aboveground facilities would help restore the visual setting that surrounds the community by removing modern, man-made intrusions that can be seen from the residences and local roads.

4.2.9 Special Designations and Recreation

Impacts to special designations and recreation under Alternative D would be very similar to the impacts described under Alternative A (see Section 4.1.9). Under Alternative D, more surface disturbance would occur within the Lower Gorge ACEC than compared to Alternative A; however, the impacts to the special designations would be fewer because they would be primarily located within the NM 68 ROW and would not cross the Rio Grande WSR segment. Construction of the proposed pipeline would remove approximately 77 acres of vegetation, which represents 0.4% of the Lower Gorge ACEC. The proposed pipeline ROW would be collocated along NM 68 for 6.5 of the 7.2 total miles of the re-routed pipeline, thereby minimizing impacts to the special designations. One staging area would be located in the Copper Hill ACEC, but no new surface disturbance would occur within the ACEC because the staging area would be located within a portion of the old quarry located on BLM lands approximately 0.5 mile north of the Rio Grande Gorge Visitor Center.

Approximately 18 acres of surface disturbance within the ACEC would be located outside the NM 68 ROW. The permanent surface disturbance includes two 0.1-acre aboveground facilities, one located at the base of Taos Plateau and the other near Rinconada. These aboveground facilities would house a new block valve, inline inspection facilities, and SCADA equipment. The maximum height of the equipment at the aboveground facilities would be a 15-foot-tall tower for the SCADA equipment. The addition of new infrastructure to the area would add a new, although incremental, visual element to the landscape. However, given the location of the pipeline route, either within the NM 68 ROW or in the unnamed drainage north of Pilar, no significant adverse impacts to the scenic values in the ACEC or the WSR of the Rio Grande have been identified. Refer to Section 4.1.8 for more information regarding visual resource impacts and compliance with VRM classes.

The collocation of the majority of the proposed project along the existing NM 68 ROW would minimize the level of intrusion on the natural landscape. Alternative D is not in conflict with management prescriptions for the Lower Gorge ACEC because the RMP allows for new utility projects to be underground and collocated within existing ROWs and roads (BLM 2012:42). Alternative D would not compromise the ORVs identified for the entire designated WSR segment of the Rio Grande; however, there would be localized

impacts to a few of the ORVs in discrete locations. Table 4.7 summarizes the potential impacts to the ORVs associated with the WSR segment from Alternative D.

Table 4.7. Impact Summary for Rio Grande ORVs

ORV	Impact from Alternative D	Rationale for Impact Determination
Scenery	Localized, temporary adverse impact	Construction activities would result in a temporary impact to scenic views along the Rio Grande, where construction of Alternative D within the NM 68 ROW would be visible from the river. The permanent aboveground facilities on each end of the Alternative D route would not be visible from the Rio Grande.
Recreation	Localized, temporary impact	Construction activities would result in temporary indirect impacts to recreation activities, such as off-season rafting, fishing, and photography, primarily in the form of traffic delays to access recreational sites and the Rio Grande Gorge Visitor Center.
Geology	No impact	Alternative D would not impact geological features in the Rio Grande Gorge.
Fish and wildlife	Localized, temporary impact	Construction activities would be conducted outside the migratory bird season. However, wildlife present in the area would be temporarily disturbed from the increased activity and noise where the Rio Grande is located in proximity to NM 68.
Cultural values	No impact	Alternative D would not impact cultural values associated with the Rio Grande WSR segment.

Temporary impacts to special designations and recreation from Alternative D are very similar to Alternative A. Temporary impact would be increased truck traffic during the construction phase of the project and potential conflicts among vehicle drivers accessing the Rio Grande Gorge Visitor Center, the Orilla Verde recreation area, and river access points located along NM 68. The temporary storage of water tanks in the Rio Grande Gorge Visitor Center parking lot would reduce parking availability for visitors for the duration of hydrostatic testing activities, which are estimated to last approximately 1 to 2 weeks during the month of November. This is not expected to be a major impact because less people frequent the visitor center in the late fall and winter, and the visitor center has reduced hours of operation during this time.

Similar to Alternative A, construction would overlap with the last two months of the peak rafting season, which occurs from April through September. Commercial rafting businesses and individual recreationists are likely to experience traffic delays resulting from lane closures on NM 68. The lane closures would delay vehicles attempting to reach river access points along the roadway. It is estimated that traffic delays would range from 10 to 15 minutes, depending on the time of day and associated traffic volumes within the project area (personal communication, teleconference with NMGC staff: Chris Turnbow, Peter Ford, and Curtis Winner to Coleman Burnett, SWCA, on December 14, 2015). Construction within the NM 68 ROW is estimated to last for approximately 120 days (4 months) under Alternative D, resulting in adverse impacts to recreationists during this time. The proposed project is not expected to impact trail usage or rock climbing opportunities in the project vicinity.

Portions of the project area within the special designations and recreation area not required for long-term maintenance or access would be reclaimed with a BLM-approved seed mix at the end of the construction phase. This design feature would minimize impacts to the special designations by supporting regrowth of vegetation within the disturbed areas.

Old Spanish National Historic Trail

Please refer to Section 4.2.5, Cultural Resources, for a description of impacts to the Old Spanish National Historic Trail from Alternative D.

4.2.10 Travel and Access

Impacts to travel and access under Alternative D would be very similar to the impacts described under Alternative A (see Section 4.1.10). Adverse impacts would occur during construction of the 6.5-mile segment of Alternative D that would be collocated within the NM 68 ROW. In order to safely place the re-routed pipeline within the highway ROW, traffic flow would need to be reduced to one travel lane to accommodate construction equipment, personnel, and the pipeline trench. Under Alternative D, the one-lane construction zone would include the County Line and Quartzite recreation access areas, the NM 68/NM 570 intersection, and the access to the Rio Grande Gorge Visitor Center. Ingress and egress at these locations would experience delays during construction, as described below. The driveway access to the Rio Grande Gorge Visitor Center would be partially closed to allow for installation of the pipeline under the driveway.

Preliminary discussions between NMGC and the NMDOT indicate that no more than 1.5 miles of NM 68 can be reduced to one lane of traffic at any one time, which includes 1 mile of construction area plus an additional 0.25-mile safety zone on each end of the construction area. A pilot car, operating 24 hours per day, would be used to guide traffic through the one lane at a reduced speed, allowing traffic to flow in both directions in an alternating fashion. It is estimated that traffic delays would range from 10 to 15 minutes, depending on the time of day and associated traffic volumes within the project area (personal communication, teleconference with NMGC staff: Chris Turnbow, Peter Ford, and Curtis Winner to Coleman Burnett, SWCA, on December 14, 2015). Construction within the NM 68 ROW would last for approximately 120 days (4 months) under Alternative D, resulting in adverse impacts to traffic during this time.

Construction activities within the NM 68 ROW would be required to follow an NMDOT-approved traffic control plan. The traffic control plan would be developed and submitted to the NMDOT for review after the BLM decision on the selected alternative is approved. Coordination with emergency personnel providing services to the communities of Pilar and Rinconada would occur as part of the traffic control planning process. No interruptions to emergency services are expected to occur as a result of the proposed project.

4.2.11 Livestock Grazing

The north end of Alternative D would intersect with the Hondo Allotment, which is located on top of Taos Plateau. The primary impact to livestock grazing would be forage removed from clearing vegetation. Under Alternative D, the access road, block valve facility, and pipeline ROW (including staging area and temporary work space) would impact approximately 6 acres of forage in the Hondo Allotment. Approximately 3 acres would be short-term impacts associated with the pipeline ROW, staging area, and temporary workspace, which would be reclaimed after construction is complete. Based on the U.S. Drought Monitor report for January 2016, no drought areas occur within the TFO planning area (National Drought Mitigation Center 2016). Adequate rainfall would support conditions for successful reclamation of the project area within 2 years. Herbaceous production and forage levels may be restored within two to three growing seasons.

The access road (3.1 acres) and block valve facility (0.1 acre) would be used throughout the operational phase of the project and would not be reclaimed until the project is abandoned, at which time final reclamation would occur (see Section 2.3.4).

A short section of the northeast corner of the Hondo Canyon Fence may need to be reconstructed to allow for the improvement of the pipeline access road. As detailed in Section 2.4, all fences would be returned to their pre-construction conditions or as agreed to by the BLM and allotment permit holder. If the access road is to be permanently located within the fence, a gate would be installed to provide access and protect grazing animals.

Additionally, impacts to livestock can occur when holes, ditches, or trenches are not excluded properly. Any type of hole or ditch is potentially a hazard to livestock while grazing. Cow or calf injuries (including broken legs) may occur if they fall into a ditch or trench-type cavity or in the process of trying to get out. The design features detailed in Section 2.4 include measures to minimize these impacts, including installing temporary gates or barriers to prevent livestock from accessing the open trench during non-work hours and seeding with native grass seed mix to revegetate the disturbed area. While movement of livestock in and around

the project area may be temporarily impeded during construction, there should be few impacts to livestock once construction is complete.

Surface disturbance resulting from construction activities and the access road may facilitate the introduction and spread of noxious weeds within the allotment. Noxious weeds can accelerate soil erosion, which would reduce site productivity and limit grazing opportunities through a reduction in available AUMs. In addition to the design features for minimizing the introduction and spread of noxious weeds (see Section 2.4), the Reclamation Plan for the project would include actions to address the occurrences of noxious weeds, treatment of known noxious weed areas, and methods to minimize the spread and establishment of noxious weeds and non-native invasive species.

4.2.12 Public Health and Safety

The potential impacts to public health and safety that have been described for Alternative A also apply to Alternative D. See Section 4.1.12 above for the analysis of potential impacts to public health and safety.

4.3 No Action Alternative

This section describes the impacts to resources and resource uses resulting from the No Action Alternative. Under this alternative, NMGC would not be granted the requested ROW, the Taos Mainline would not be re-routed or upgraded, nor would the associated surface disturbance occur. A new block valve would not be built, nor would the Rinconada block valve be upgraded to accommodate the inline inspection tool launcher and receiver.

4.3.1 Soils

Under the No Action Alternative, there would be no impacts to soils because the ROW grant would not be granted and no surface disturbance would occur. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to soils.

4.3.2 Water Resources

Under the No Action Alternative, there would be no impacts to water resources because the ROW grant would not be granted and no surface disturbance would occur. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to water resources.

4.3.3 Cultural Resources

In total, five NRHP-eligible resources intersect the existing project ROW as part of the No Action Alternative (Table 4.8). No impacts to these cultural resource sites would occur under the No Action Alternative because the NMGC would be required to avoid impacting known cultural resources when conducting routine maintenance activities.

Table 4.8. Eligible Cultural Resource Sites Located within the No Action Alternative

LA/HCPI No.	Site Type/Cultural Affiliation and Dates	Eligibility Recommendation	Impact
LA 180696	Rock art; unknown aboriginal; Hispanic: unspecified historic (A.D. 1539–1950)	Criteria A and D	No impact – routine maintenance activities would be required to avoid impacts to cultural resources
LA 180697	Rock art; unknown affiliation: unspecified historic (>A.D. 1550)	Criterion A	
LA 180698	Rock art; unknown aboriginal: unknown prehistoric or historic	Criterion A	
LA 180699	Rock art; unknown aboriginal: unknown prehistoric or historic	Criterion A	
LA 180702	Rock art; unknown affiliation: Early Archaic through U.S. Territorial	Criterion A	

4.3.4 Vegetation and Invasive Non-native Species

Under the No Action Alternative, there would be no impacts to vegetation or invasive non-native species because the ROW grant would not be granted and no surface disturbance would occur. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to vegetation.

4.3.5 Wildlife and Special Status Species

Under the No Action Alternative, there would be no impacts to wildlife and special status species because the ROW grant would not be granted and no surface disturbance would occur. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to wildlife and special status species.

4.3.6 Visual Resources

Under the No Action Alternative, there would be no impacts to visual resources because the ROW grant would not be granted and no surface disturbance would occur. The visual and scenic quality would remain unchanged from the current conditions. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to visual resources.

4.3.7 Special Designations and Recreation

Under the No Action Alternative, NMGC would not be granted the requested ROW to re-route the Taos Mainline out of the current ROW location that parallels the Rio Grande on the west side of the river. In some locations, the buried pipeline has been excavated from the trench and laid on the ground surface to minimize further impacts from landslide movement. Most of these pipeline segments are not located near recreation areas. However, at least one section of exposed pipeline is visible from NM 68 and the Rio Grande, near the southern end of the No Action Alternative. In this area, the No Action Alternative would have permanent adverse impact to the scenic values of the Lower Gorge ACEC and WSR segment as an unexpected visual element to the landscape.

The No Action Alternative is not in conflict with management prescriptions for the Lower Gorge ACEC because the ROW has already been granted by the BLM and is grandfathered into the TFO RMP (2012). The No Action Alternative would not compromise the ORVs identified for the entire designated scenic WSR

segment of the Rio Grande; however, there would be localized adverse impacts to the scenery ORV where the unburied portion of the existing pipeline would be seen from the Rio Grande.

4.3.8 Travel and Access

Under the No Action Alternative, there would be no impacts to travel and access because the ROW to re-route and upgrade the existing pipeline would not be granted, and thus no construction within the NM 68 ROW would occur. Under this alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in maintenance activities, pipeline failures, as well as leaks and spills. Implementation of these potential corrective actions could result in impacts to travel and access along NM 68 and other roads in the project vicinity to allow construction vehicles to access the existing ROW.

4.3.9 Livestock Grazing

Under the No Action Alternative, there would be no impacts to livestock grazing because the ROW to re-route and upgrade the existing pipeline would not be granted, and thus no new disturbance or changes would occur.

4.3.10 Public Health and Safety

Under the No Action Alternative, NMGC would not be granted the requested ROW and the Taos Mainline would not be re-routed or upgraded. The new block valve, south of Pilar, would not be built, the Rinconada block valve would not be updated. Inspection of the pipeline would continue to occur via visual inspection of the existing pipeline ROW and the pipeline stress gauges installed at six locations on the Taos Mainline within the landslide deposits. Repairs of the pipeline and routine ROW maintenance would occur as needed.

Selecting the No Action Alternative would not address public health and safety issues related to detecting pipeline stressors that could cause service interruptions, leaks, or failures. Furthermore, under the No Action Alternative, the pipeline would remain located within a landslide hazard area and thereby remain susceptible to future landslides that could result in service interruptions and failures, as well as leaks and spills that threaten public health and safety. The applicant has identified the risks to the public from the No Action Alternative to be greater than those from either action alternative, because of the geologic instability around the existing line and the increased potential for outages and stress on the pipeline.

4.4 Cumulative Effects Analysis

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such action.

4.4.1 Cumulative Actions

Past actions that have affected the natural and human environment within the Rio Grande Gorge include small farming, mining, development of roads and utilities, residential development, and recreation infrastructure development.

Present actions within the proposed project area include continued farming, recreational activities, road maintenance, and residential development on private lands.

Reasonably foreseeable future actions include proposed improvements to NM 68 by the NMDOT and ongoing recreational activities, including permitted commercial rafting of the Racecourse on the Rio Grande WSR segment.

4.4.2 Cumulative Effects

Soils

Cumulative impacts to soil resources would occur from proposed improvements to NM 68 by the NMDOT, ongoing recreation activities, and from existing recreation infrastructure. The magnitude of impacts to soil resources would depend on the placement and type of surface disturbance, and the type of soil and the topography within the individual project areas. Generally, soil erosion would be expected to occur, especially when storm events occur during construction. The transportation improvement project would be required to follow BMPs, such as the development and implementation of a SWPPP to minimize sediments leaving the construction. Impacts to soils from permitted commercial rafting on the Rio Grande would be minimal as rafters enter and leave the river at designated, armored river access points. Some soil erosion likely occurs from graveled parking lots and incidental rafting pullouts on the river bank.

Water Resources

Cumulative impacts to water resources would occur from the proposed improvements to NM 68 by the NMDOT and from ongoing recreation activities. The magnitude of impacts to water resources would depend on the placement and type of surface disturbance, and the type of soil and the hydrologic conditions within the individual project areas. Generally, soil erosion and sedimentation of local drainages would be expected to occur, especially when storm events occur during construction. The transportation improvement projects would be required to follow BMPs, such as the development and implementation of a SWPPP to minimize sediments leaving the construction site. Impacts to water resources from permitted commercial rafting on the Rio Grande would be minimal as rafters enter and leave the river at designated, armored river access points. Minimal impacts to water resources may occur from human presence and the deposition of trash and waste along the river bank.

Cultural Resources

BLM staff archaeologists have been integrated into the assessment process to promote proactive, long-term management and preservation of cultural resources. Proposed improvements to NM 68 by the NMDOT would undergo a cultural resource inventory and survey prior to any construction activities taking place. In addition, the NMDOT would consult with the BLM TFO and the HPD prior to undertaking any road improvements to address cultural resource concerns. No cumulative impacts to cultural resources from ongoing permitted rafting activities are expected.

Vegetation and Invasive Non-native Species

Cumulative impacts to vegetation would occur from the proposed improvements to NM 68 by the NMDOT and from ongoing recreation activities. The magnitude of impacts would depend on the placement and type of surface disturbance and the plant species present within the proposed locations of the NM 68 improvement project. Generally, native vegetation loss and the spread of noxious weeds would be expected to occur, especially during construction. The transportation improvement project would be required to follow BMPs, such as the development and implementation of a SWPPP to minimize vegetation impacts. The subject projects would require BMPs and other mitigation to reduce these impacts. In time, the reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, although species composition may not be similar to pre-disturbance conditions. Impacts to vegetation from permitted commercial rafting on the Rio Grande would be minimal as rafters enter and leave the river at designated, armored river access points. Some vegetation disturbance likely occurs from incidental rafting pullouts on the river bank.

Wildlife and Special Status Species

Cumulative impacts to wildlife, migratory birds, and special status species would occur from the proposed improvements to NM 68 by the NMDOT and from ongoing recreation activities. The magnitude of impacts would depend on the placement and type of surface disturbance and the available habitat within the individual project areas. Generally, native vegetation loss, increased noise, and habitat degradation would be expected to occur, especially during construction of proposed NM 68 road improvements. In time, the

reclaimed and seeded areas would result in stable plant communities with densities that are similar to the pre-disturbance plant densities, although the plant species may be different than the vegetative communities present prior to construction. Some species would also adapt to noise associated with maintenance and operation of these actions.

Cumulative impacts to wildlife would occur from the NM 68 road improvements by the NMDOT, primarily in the form of human presence, increased traffic by construction vehicles, and noise. Because the improvements would occur along the existing roadway, only incremental expansions of the road's footprint in certain areas are expected; therefore, new habitat fragmentation would be low to non-existent. Cumulative impacts from permitted river rafting activities may also impact wildlife in the form of human presence and noise, although these impacts are expected to be minimal.

Both the proposed road improvements and the annual permitted rafting activities would be reviewed by the BLM prior to project implementation. If deemed necessary, consultation with the USFWS regarding impacts to special status species would occur. Mitigation measures and design features would be established, as needed, to minimize cumulative impacts to special status species.

Visual Resources

Cumulative actions are expected to conform to VRM Class II established for the project area. No change in VRM classes would be anticipated by the cumulative actions together with the selection of any of the three alternatives.

Special Designations and Recreation

Cumulative impacts to the special designations would include surface disturbance, vegetation removal, and construction noise resulting from the NM 68 road improvement project. Because the improvements would occur along the existing roadway, only incremental expansions of the road's footprint in certain areas are expected; therefore, impacts to special designations would be minimal. Cumulative impacts to recreation would result from potential temporary limited access or closure of river sites (adverse impacts), temporary increase of noise and human presence from construction/maintenance activities (adverse impacts), and long-term improved access to river sites (beneficial impacts).

Travel and Access

Cumulative impacts to travel and access would occur from proposed road improvements to NM 68 by the NMDOT, resulting from temporary traffic delays in construction zones (adverse impacts) and long-term improvements to traffic safety conditions on the road (beneficial impacts). It is unlikely that improvements to NM 68 would occur at the same time as construction of Alternative A or D; therefore, the cumulative impacts would not occur at the same place and time. No impacts to travel and access are expected from permitted commercial rafting activities on the Rio Grande.

Livestock Grazing

Given the location of the one livestock grazing allotment impacted by Alternative D (on top of Taos Plateau), no cumulative impacts to livestock grazing are expected from either NM 68 road improvements or permitted commercial river rafting activities.

Public Health and Safety

Cumulative beneficial impacts to public health and safety would occur from the NM 68 improvement project because the road would be made safer for the traveling public. A countervailing cumulative impact to public health and safety would be the risk, although reduced in comparison to the No Action Alternative, from relocating the pipeline to the NM 68 ROW.

5 CONSULTATION AND COORDINATION

5.1 Summary of Consultation and Coordination

The BLM TFO mailed letters to 15 tribes in December 2014 seeking comments and initiating consultation for the proposed project (Table 5.1). BLM TFO staff has managed ongoing tribal consultation activities for the proposed project.

Table 5.1. Tribes Notified of the Proposed Project

Comanche Indian Tribe	Hopi Tribe
Isleta Pueblo	Jicarilla Apache Nation
Kiowa Tribe	Navajo Nation
Ohkay Owingeh Pueblo	Picuris Pueblo
Southern Ute Tribe	Taos Pueblo
Tesuque Pueblo	Pojoaque Pueblo
Pueblo de San Ildefonso	Santa Clara Pueblo
Zia Pueblo	

The BLM TFO will initiate ESA Section 7 and NHPA Section 106 consultation with the USFWS and the HPD, respectively, as determined necessary.

5.2 Summary of Public Participation

Public scoping for the proposed project occurred in November and December 2014. A scoping letter describing the project and its location was posted on the TFO's website on October 29, 2014 (http://www.blm.gov/nm/st/en/fo/Taos_Field_Office.html) in order to invite public comment. Ninety-three hardcopy letters were mailed by to the BLM TFO public mailing list and 217 email notifications were distributed. A public scoping meeting was held on November 13, 2014, in Taos and was attended by 28 people. Public scoping comments were collected from November 1 through December 16, 2014, which included a 15-day extension of the public scoping period.

Twenty-three comment letters, comment forms, and emails were received during the public scoping period. From this correspondence, 101 comments were identified and coded. Table 5.2 summarizes the comment categories, which are also reflected in the issue statements described in Section 1.4.

Table 5.2. Public Comments Received during Scoping

Comment Category	Number of Comments Received
Purpose and need	6
Alternatives	29
Mitigation measures	3
Scope of proposed project	8
Cultural resource impacts	9
Wildlife/Natural resource impacts	9
Water resource impacts	6
Public health and safety impacts	2
Recreation impacts	7
Visual resource impacts	4
General impacts	5
Cumulative impacts	5
Public information	7
Tribal correspondence	1
Total	101

Many of the comments received during public scoping expressed concerns about Alternatives A and B, which would re-route the pipeline either across previously undisturbed land near Pilar or along the mesa top to the west of the Rio Grande. Residents of Pilar expressed concerns for construction-related impacts to the community of Pilar, such as construction vehicles using the NM 570 bridge and construction noise in proximity to residences. Numerous comments discussed the potential impacts to visual resources and cultural resources from Alternative B. Several comments were provided that encouraged further consideration of repairing and replacing the pipeline within the existing ROW, which was subsequently named Alternative C and considered by both NMGC and the BLM before being dismissed as technically infeasible (see Section 2.6).

As shown in Table 5.2, several comments were related to potential project impacts to resources. The substantive comments are identified in Section 3 and addressed in Section 4, under the appropriate resource.

(This section will be completed following a public review and comment period on this EA.)

5.3 List of Preparers

Name	Organization
Brad Higdon, Planning and Environmental Specialist	BLM TFO
Michael Rodriguez, Realty Specialist	BLM TFO
Merrill Dicks, Archeologist	BLM TFO
Tami Torres, Recreation Specialist	BLM TFO
Chris Turnbow, Environmental Scientist	NMGC
Rebecca Sandoval, Project Manager	NMGC
Matt McMillan, Project Manager and Biologist	SWCA
Coleman Burnett, NEPA Coordinator	SWCA
Amber Ballman, Biologist and NEPA Writer	SWCA
Shannon Manfredi, NEPA Specialist	SWCA
Paige Marchus, Visual Resource Specialist and Senior NEPA Reviewer	SWCA
Allen Stutz, Visual Simulations	SWCA
Anne Russell, Geographic Information System (GIS) Specialist and Visual Resource Specialist	SWCA
Julie Martin, GIS Specialist	SWCA

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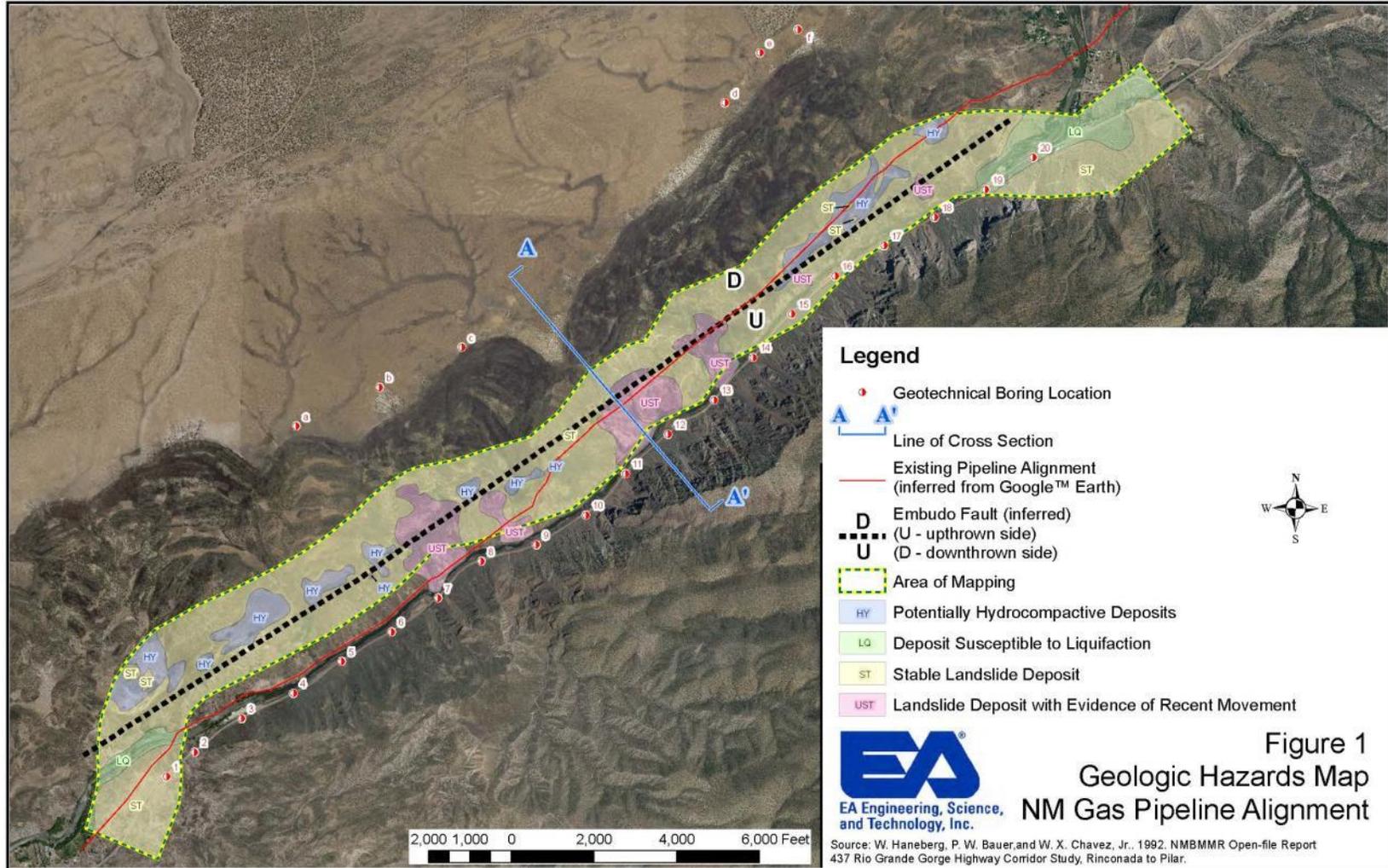
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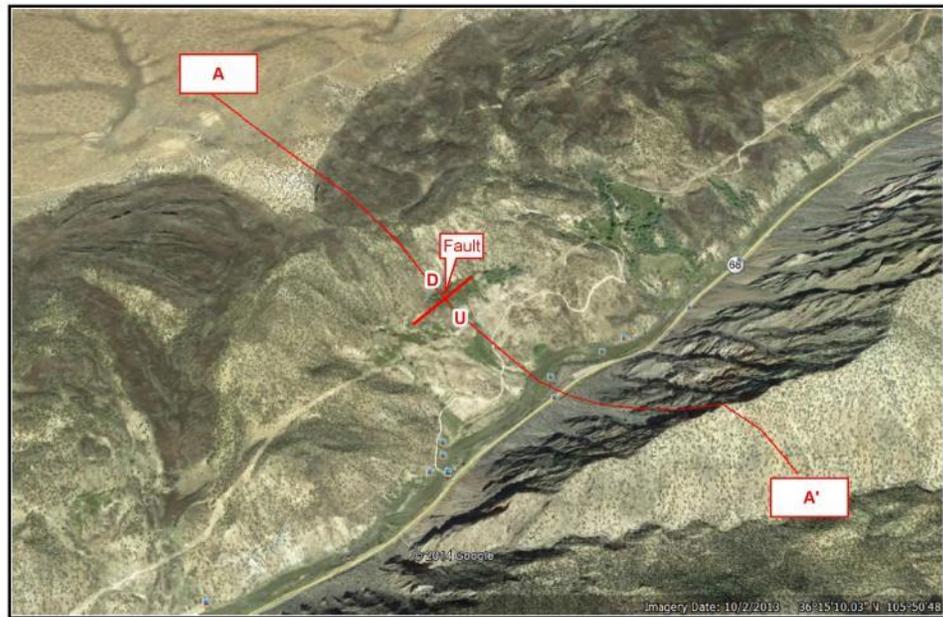
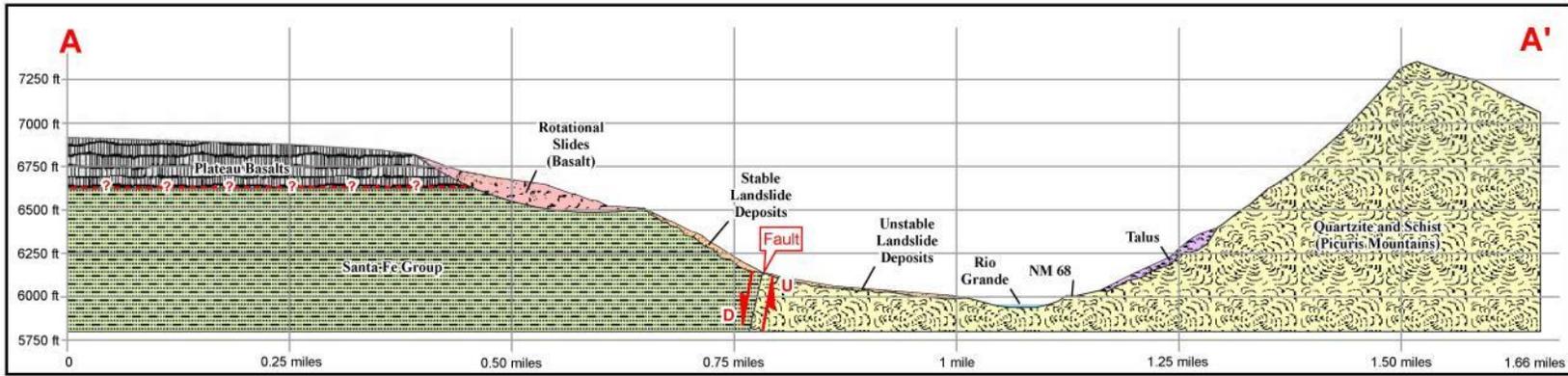
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APPENDIX A. GEOLOGICAL MAPS OF THE PROJECT AREA

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Legend

- Landslide Deposit
- Plateau Basalts
- Quartzite and Schist
- Santa Fe Group
- Rotational Slides (Basalt)
- Talus
- Road
- River



Figure 2
Geologic Cross Section
NM Gas Pipeline Alignment

Source: Google Earth™ 2015.

APPENDIX B. VISUAL CONTRAST RATING WORKSHEETS

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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: March 9, 2016
 District Office: Farmington
 Field Office: Taos
 Activity (program): ROW

SECTION A: PROJECT INFORMATION

1. Project Name: Taos Mainline Reroute Project	4. Location Township <u>24N</u>	5. Location Sketch 
2. Key Observation Point KOP #1, BLM Visitors Center, Alternative A	Range <u>11E</u>	
3. VRM Class Class II	Section <u>32</u>	

SECTION B: CHARACTERISTICS LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Large hills, steep slopes/cliffs, some flat foreground, large ridges in background	Irregular in places, smooth, riverine, round, irregular, continuous (grass)	Rectangle, cylinder, linear, square
LINE	Vertical on cliffs, horizontal lines, angular diagonal slope lines, water line, rounded	Vertical trees and trunks, sinuous, waterline, edge effects (horizontal, vertical, angular)	Horizontal, vertical, angular, diagonal, circular, oval.
COLOR	Grey, blackish brown, tan, reddish/purple/maroon, brown, grayish green water	Light green, dark green, brown, tan, ash green	Blue green, pink, white, reddish brown, dark brown, faint yellow, silver/metal, red, black
TEX-TURE	Fine background, coarser in foreground, water smooth to some texture	Coarse, fine (grass), irregular, patches/clumps	Sparse, coarse, irregular

SECTION C: PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	None	Possible removal one or two trees	none
LINE	Introduction of new linear feature on the land	Removal of grassy vegetation creates a linear contrast to vegetation	none
COLOR	Change in soil color during construction and initial reclamation with gradual return to pre-soil colors.	Change in color from removal of vegetation, vegetation regrowth would remain slightly lighter than surrounding	none
TEX-TURE	Change in texture to land from uneven areas to more smooth	Change in texture of vegetation as natural vegetation is more lumpy, bushy, and vegetative regrowth is smoother, grassy	none

SECTION D. CONTRAST RATING SHORT TERM LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does the project design meet visual resource management objectives? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (explain on reverse side) 3. Additional mitigating measures recommended <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Explain on reverse side)		
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)						
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE			
ELEMENTS	FORM			X				X							X	Evaluator's Names Date 3/9/16
	LINE		X				X							X		
	COLOR			X			X							X		
	TEXTURE			X				X						X		

SECTION D. (Continued)

Comments from item 2.

The visual objectives of VRM II are to not attract the attention of the casual observer and to limit major contrasts. In this case, a tree screen limits the amount of project disturbance actually visible from this KOP. During and shortly after construction the new pipeline ROW would be visible and might attract the attention of a casual observer, however, after reclamation and reseeding, the vegetative regrowth would reduce the contrast more and more as time goes by. 2-5 years post-construction the pipeline row would no longer attract the attention of the observer or create a major contrast to the landscape. Therefore, VRM II objectives are met for the long-term.

Alternative A would have a greater impact to the viewshed of the river corridor than Alternative D, because Alternative A would be more visible from the river than Alternative D.

Additional Mitigating Measures (See item 3)

Tree screens should be left in place and boulders or other landscape features restored or left in place where possible. Reseeding should mimic the existing vegetation including planting of trees and tall shrubs where appropriate.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: March 9, 2016
 District Office: Farmington
 Field Office: Taos
 Activity (program): ROW

SECTION A: PROJECT INFORMATION

1. Project Name: Taos Mainline Reroute Project	4. Location Township <u>24N</u>	5. Location Sketch 
2. Key Observation Point KOP #1, BLM Visitors Center, Alternative D	Range <u>11E</u>	
3. VRM Class Class II	Section <u>32</u>	

SECTION B: CHARACTERISTICS LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Large hills, steep slopes/cliffs, some flat foreground, large ridges in background	Irregular in places, smooth, riverine, round, irregular, continuous (grass)	Rectangle, cylinder, linear, square
LINE	Vertical on cliffs, horizontal lines, angular diagonal slope lines, water line, rounded	Vertical trees and trunks, sinuous, waterline, edge effects (horizontal, vertical, angular)	Horizontal, vertical, angular, diagonal, circular, oval.
COLOR	Grey, blackish brown, tan, reddish/purple/maroon, brown, grayish green water	Light green, dark green, brown, tan, ash green	Blue green, pink, white, reddish brown, dark brown, faint yellow, silver/metal, red, black
TEX-TURE	Fine background, coarser in foreground, water smooth to some texture	Coarse, fine (grass), irregular, patches/clumps	Sparse, coarse, irregular

SECTION C: PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	None	None	Construction vehicles and equipment would be visible in the foreground, during construction
LINE	None	None	Construction vehicles and equipment would be visible in the foreground, during construction
COLOR	None	None	Construction vehicles and equipment would be visible in the foreground, during construction
TEX-TURE	None	None	Construction vehicles and equipment would be visible in the foreground, during construction

SECTION D. CONTRAST RATING X SHORT TERM ___ LONG TERM

1. DEGREE OF CONTRAST ELEMENTS	FEATURES												2. Does the project design meet visual resource management objectives? <u> X </u> Yes ___ No (explain on reverse side) 3. Additional mitigating measures recommended ___ Yes <u> X </u> No (Explain on reverse side) Evaluator's Names Date 3/9/16
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	
	FORM			X				X		X			
	LINE			X				X		X			
COLOR			X				X		X				
TEXTURE			X				X		X				

SECTION D. (Continued)

Comments from item 2.

The visual objectives of VRM II are to not attract the attention of the casual observer and to limit major contrasts. In this case, the proposed alignment for Alternative D would be constructed in the shoulder of the existing Highway 68. During construction the new pipeline ROW and equipment used to construct the pipeline would be visible and would attract the attention of a casual observer, however, these impacts would be temporary and would last for approximately 30 days, the timeframe required to install the pipeline in the immediate vicinity of the visitor's center, control traffic, and cover and recontour and resurface the shoulder of the road. Therefore, VRM II objectives would be met for the long-term.

Alternative D would have a short-term impact to KOP 1 due to the presence of construction vehicles and activity in the immediate vicinity of the Visitor's Center, for approximately 30 days while the proposed pipeline is installed along NM 68.

Additional Mitigating Measures (See item 3)

No mitigation measures are required as the shoulder of NM 68 would be returned to pre-construction conditions.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: March 9, 2016
 District Office: Farmington
 Field Office: Taos
 Activity (program): ROW

SECTION A: PROJECT INFORMATION

1. Project Name: Taos Mainline Reroute Project	4. Location Township <u>24N</u>	5. Location Sketch 
2. Key Observation Point KOP #2, Highway 68, Alternative A	Range <u>11E</u>	
3. VRM Class Class II	Section <u>28</u>	

SECTION B: CHARACTERISTICS LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	steep slopes/cliffs, some flat foreground, large ridges in background	Irregular in places, smooth, cut drainages, round, irregular, continuous (vegetation)	None
LINE	Vertical on cliffs, horizontal lines, angular diagonal slope lines,	Vertical trees and trunks, edge effects (horizontal, vertical, angular)	None
COLOR	Grey, blackish brown, tan, reddish/purple/maroon, brown,	Light green, dark green, brown, tan, ash green	None
TEX-TURE	Fine background, coarser in foreground,	Coarse, fine (grass), irregular, patches/clumps	None

SECTION C: PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	None	None	None
LINE	None	None	None
COLOR	None	None	None
TEX-TURE	None	None	None

SECTION D. CONTRAST RATING SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST		FEATURES												2. Does the project design meet visual resource management objectives? <u> X </u> Yes <u> </u> No (explain on reverse side) 3. Additional mitigating measures recommended <u> </u> Yes <u> X </u> No (Explain on reverse side) Evaluator's Names Date 3/9/16
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	
ELEMENTS	FORM				X									X
	LINE				X									X
	COLOR				X									X
	TEXTURE				X									X

SECTION D. (Continued)

Comments from item 2.

The visual objectives of VRM II are to not attract the attention of the casual observer and to limit major contrasts. In this case, Alternative A would not be visible from KOP 2, therefore

In summary, Alternative A would not be visible from KOP 2, therefore, Alternative D would have a greater impact to visual resources, as analyzed from KOP 2.

Additional Mitigating Measures (See item 3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
VISUAL CONTRAST RATING WORKSHEET

Date: March 9, 2016
 District Office: Farmington
 Field Office: Taos
 Activity (program): ROW

SECTION A: PROJECT INFORMATION

1. Project Name: Taos Mainline Reroute Project	4. Location Township <u>24N</u>	5. Location Sketch 
2. Key Observation Point KOP #2, Highway 68, Alternative D	Range <u>11E</u>	
3. VRM Class Class II	Section <u>28</u>	

SECTION B: CHARACTERISTICS LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	steep slopes/cliffs, some flat foreground, large ridges in background	Irregular in places, smooth, cut drainages, round, irregular, continuous (vegetation)	None
LINE	Vertical on cliffs, horizontal lines, angular diagonal slope lines,	Vertical trees and trunks, edge effects (horizontal, vertical, angular)	None
COLOR	Grey, blackish brown, tan, reddish/purple/ maroon, brown,	Light green, dark green, brown, tan, ash green	None
TEX- TURE	Fine background, coarser in foreground,	Coarse, fine (grass), irregular, patches/clumps	None

SECTION C: PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Some contrast from disturbed soils on the ridge line	Removal of vegetation on the ridge line	New block valve location in middle distance with fencing around
LINE	Introduction of new linear feature on the land	Removal of grassy vegetation creates a linear contrast to vegetation	New linear proposed permanent access road
COLOR	Change in soil color during construction and initial reclamation with gradual return to pre-soil colors.	Change in color from removal of vegetation, vegetation regrowth would remain slightly lighter than surrounding	Lighter color contrast from proposed road and facility
TEX- TURE	Change in texture to land from uneven areas to more smooth	Change in texture of vegetation as natural vegetation is more lumpy, bushy, and vegetative regrowth is smoother, grassy	Linear feature and proposed block valve would create smooth textures in the vegetative landscape

SECTION D. CONTRAST RATING SHORT TERM X LONG TERM

1. DEGREE OF CONTRAST ELEMENTS	FEATURES												2. Does the project design meet visual resource management objectives? <u> X </u> Yes <u> </u> No (explain on reverse side) 3. Additional mitigating measures recommended <u> X </u> Yes <u> </u> No (Explain on reverse side) Evaluator's Names Date 11/22/16
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	
	FORM			X	X					X			
	LINE	X			X					X			
COLOR			X			X				X			
TEXTURE			X			X				X			

SECTION D. (Continued)

Comments from item 2.

The visual objectives of VRM II are to not attract the attention of the casual observer and to limit major contrasts. In this case, contrast levels exist for form, line, color, and texture. However, there is a minimal timeframe that these contrasts would be visible to casual observers driving along the highway, and would not dominate or attract their attention. During and shortly after construction the new pipeline ROW would be visible and might attract the attention of a casual observer, however, after reclamation and reseeding, the vegetative regrowth would reduce the contrast more and more as time goes by. 2-5 years post-construction the pipeline row would no longer attract the attention of the observer or create a major contrast to the landscape. The proposed permanent access road and block valve would remain in view of the highway users for the life of the project. The proposed block valve would be painted to blend with the landscape and is set back from the road approximately 1,000 feet, minimizing the contrast in view to the casual observer, and is therefore not likely to attract the attention of the passing motorists. Therefore, VRM II objectives are met for the long-term.

In summary, Alternative D would have less impact to visual resources as viewed from the river corridor, than Alternative A. However, Alternative D results in more overall disturbance to soils and vegetation than Alternative A as it is a longer alignment.

Additional Mitigating Measures (See item 3)

Boulders or other landscape materials excavated during trenching should be restored or left in place where possible. Reseeding should mimic the existing vegetation including planting of shrubs and trees where appropriate. The proposed block valve should be painted to blend with the existing colors in the landscape.
